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CANADIAN
TEXTILE JOURNAL

VOL. XXXVIII Gardenvale, P.Q., November 22, 1921 No. 24

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We have large Stocks
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FINE WOOLS IN TORONTO

which we are still selling at prices ruling before the recent advance.

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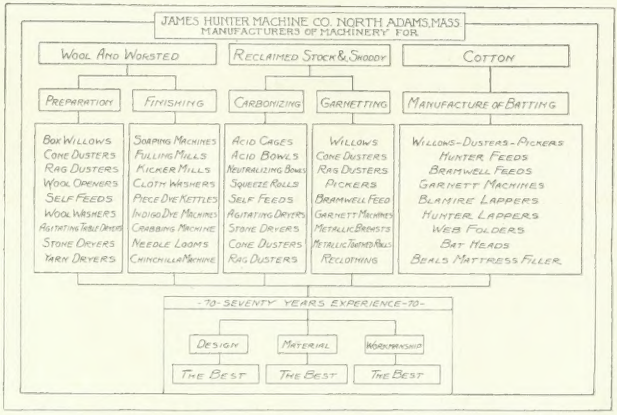

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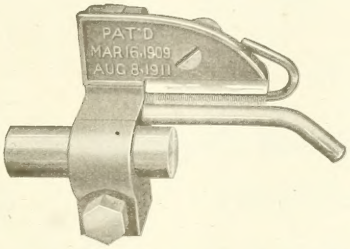

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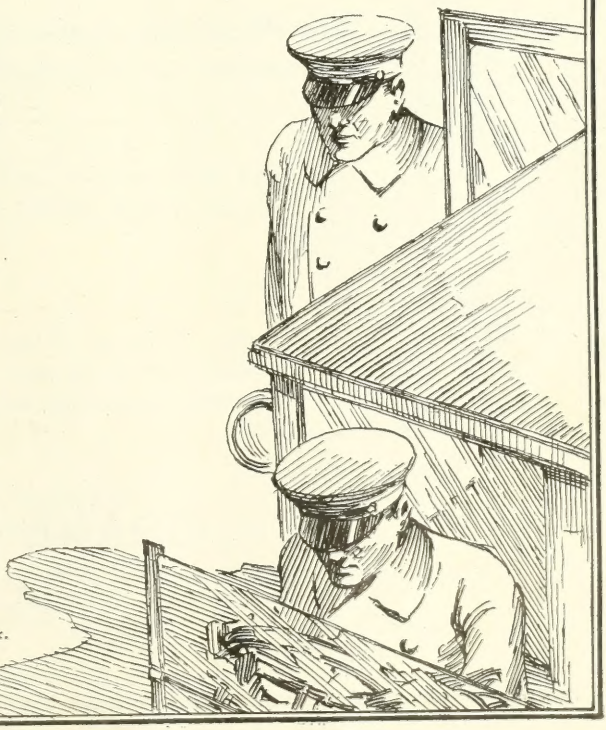

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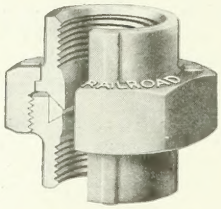
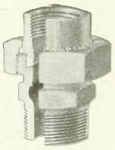
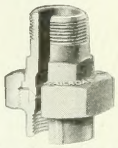


No. 519



No. 517 Reducing Pump Stud Union.



No. 519½ Male and Female Union.

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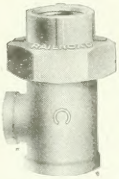
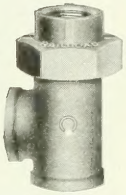
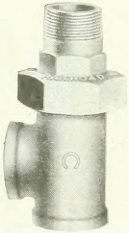


No. 594 Tee with Female Union.



No. 595 Tee Reducing or Outlet



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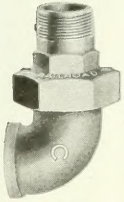
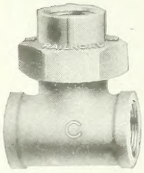


No. 592 Elbow with Male Union



No. 598 Tee Union on Outlet.

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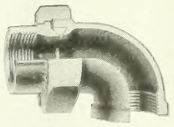

No. 590 Elbow with Female Union

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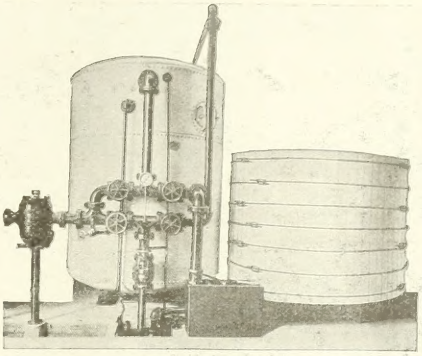
31

How A Mill Reduced Yarn Breakage to Practically Nothing



The name ano address of this plant with full details will be given upon request.

A well known textile mill in Millbury, Mass., manufacturing ticking, had considerable trouble with the breakage of yarns in their beaming machines.

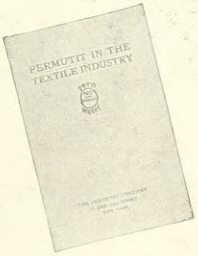
The yarn was handled in a warp about 2 inches wide, 2 or 3 strands deep and 10,000 to 12,000 yards long. It was first boiled out in a caustic soda solution and then dyed in a standing bath of indigo, after which it passed over to the beaming machines, where the threads were separated on the reel ready for weaving.

Due to the presence of lime salts in the water supply, a precipitate was formed in the dye bath that deposited on the warp, causing the individual strands to adhere, and when they were run over the beamers the yarn broke repeatedly, necessitating frequent stopping of the machins to tie in.

In November 1919 they installed Permutit Water Softening Equipment that removes all the hardness (lime and magnesia) from their water supply. A recent report stated, — "Now we have no trouble at all, and our light yarn which we make 12,000 yards long runs in 3½ hours, where before I have seen it run into the third day, and in lots of cases it has run into two weeks."

The saving in Beaming Room Labor alone, amounts to more than $6,000.00 annually (6 girls at $20.00 per week), and the entire investment in Permutit equipment paid for itself in less than one year.

It will pay you to let us investigate your water supply. All analyses are free of charge. — Write us today.



We manufacture all types of equipment for treating water to render it soft, pure and correct for any purpose. We remove iron, manganese or any other impurity. Let us send you our valuable booklet.

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Filters---Water Softeners---Special Apparatus
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Wyandotte Concentrated Ash
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unless these products produce for you the results they are claimed to produce; for the promises made for them are guaranteed or your money will be returned.

If you visited the Wyandotte Booth at the recent International Textile Exposition, you can doubtless recall the character of the results they are able to produce and the wide range of possible purposes for which they may be used. If you did not inspect this exhibit, write us for further information.

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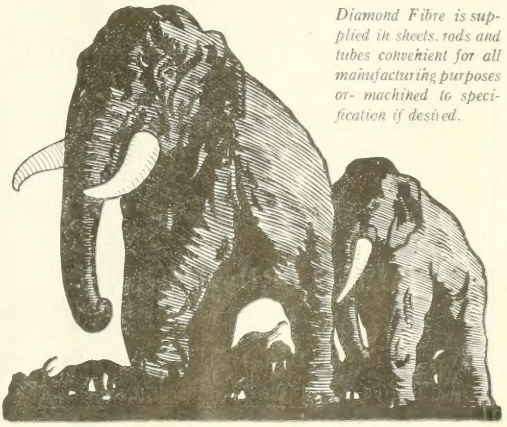

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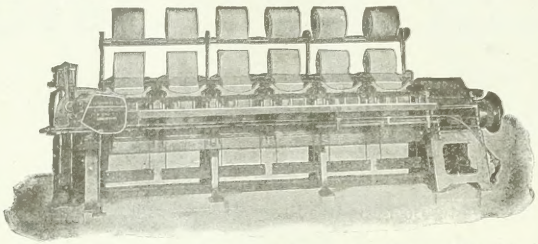

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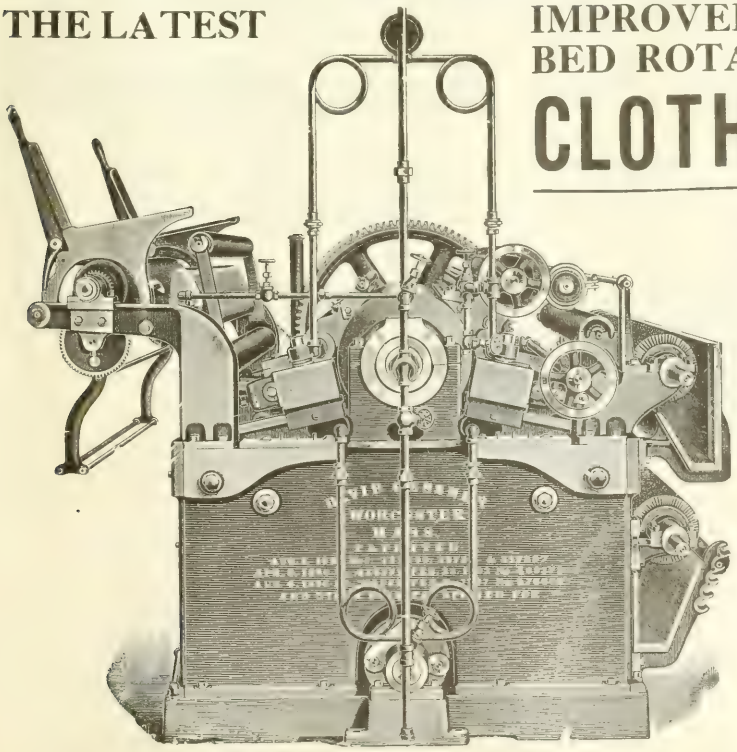

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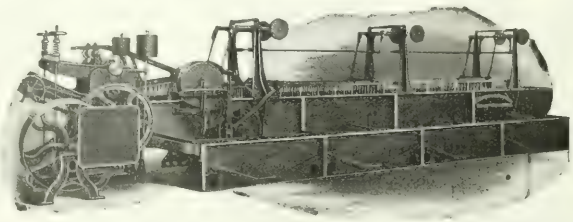
For Brighter Scoured Wool. For Saving Soap.
For Ease in Operation and Dependable Service



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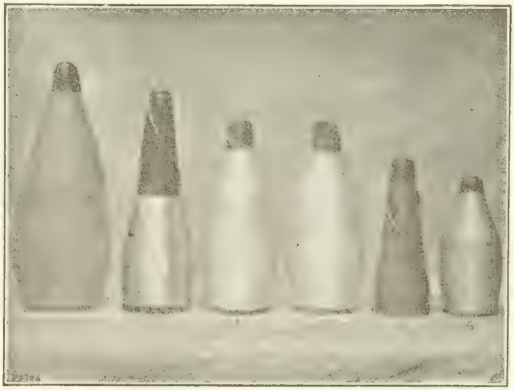

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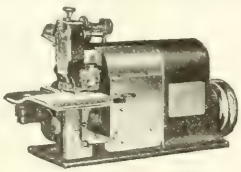

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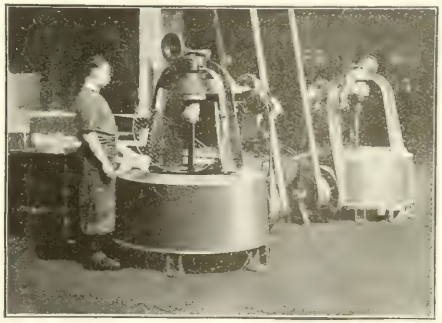

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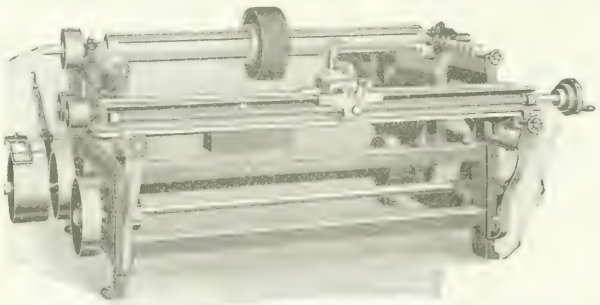

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EDITORIAL

DISARMAMENT.

All world events sink into insignificance before the Limitation of Armaments Conference at Washington. The keen attention of the world is directed towards that Conference, for the success of which the whole civilized world is praying. When President Harding issued his invitation to the Powers to meet in conference at Washington to discuss the question of disarmament, Premier Lloyd George and Premier Briand accepted with an alacrity which inspired hope, that, by the elimination of competition in naval construction, some concrete advance would be made towards permanent peace. The obvious willingness on the part of all nations to discuss such a matter at all with competing powers, was a good augury of success and led the world confidently to expect some check on the production or armaments.

Not even the most hopeful and optimistic, however, we venture to think, were prepared for the radical proposals submitted by Secretary Hughes of the United States, at the outset of the Conference. While these proposals are none too drastic for peace-loving nations and peoples torn and worn by war, the world hardly dared to expect that such a long step towards the desired goal would be proposed so soon, or that these proposals would be submitted in such a way as to give so much prospect of success, and which almost immediately created a feeling that the United States at least were prepared to make great sacrifices to achieve the end for which the Conference was called.

All the correspondents agree that the delegates to the Conference were stunned by the proposals which Secretary Hughes began to unfold as soon as President Harding had delivered his address of welcome. Under the "old style" diplomacy, such a conference would have "busied" itself for the first few days making speeches of the "diplomatic" type, in which there might and might not have been any direct reference to the subject which had brought the delegates together, and after that, secret sessions would have been the order of the day and the interest of the general public would have been at an end. The Washington Conference is different. One has reason to hope that worth while results will accrue, and, assuredly, if these hopes are not fulfilled, the blame will rest elsewhere than on the shoulders of the United States delegates.

Secretary Hughes was boldly and baldly plain in his statements. His speech must have delighted the hearts of the "open diplomatists". There was no hedging and no ambiguity in his remarks. His scheme was well thought out and he laid all his cards on the table face up. Perhaps it was that action, as much as the huge slice in armaments proposed, that amazed the delegates from other countries.

At this writing the delegates are digesting the proposals in private before meeting again in conference. At the first glance, the proposals, one, we think, must conclude, are eminently fair and just. This is borne in upon one all the more by the sacrifice that the United States is willing to make in order that the scheme might not fail of fruition. In the matter of capital ships the United States, under the proposed scheme, would scrap fifteen new capital ships with a total tonnage, when completed, of 618,000, and on which $332,000,000 has already been spent. The new and old capital ships which the United States is prepared to scrap number thirty with an aggregate tonnage of 845,740 tons. The new and old capital ships which Great Britain is asked to scrap number 19 with an aggregate tonnage of 583,375 tons. Japan is asked to scrap seven new capital ships and ten older ships with an aggregate tonnage of 448,928 tons. This would leave the United States with 18, Great Britain with 22 and Japan with 10 capital ships, to which a proportionate allowance of auxiliary craft would be prescribed. It is also proposed that for a period of ten years competitive naval building should cease, provision being made for replacement.

So far no proposals have been made with regard to the navies of France or Italy, but these will be the subject of future discussions in conference. By the time this reaches the reader, one will be better able to judge of what likelihood there is of the proposals being accepted. If all nations are as sincere in their desire for peace as they profess to be, there should be no difficulty over the first proposal, that is, that all capital ship construction stop now. It is this competition in armaments that has been the most fruitful cause of wars in the past. A continuance of the old policy would be maddening folly. The scrapping of older ships, some of which, in the case of Britain, are already scrapped, or are in process of being scrapped, is only an extension of the same principle which will make nations agree to stop all new building for ten years, but that will likely bring the conferring nations to grips concerning the naval strength to be allotted to each. On this point one may expect a great deal of discussion and some dissent. But, if the first principle is accepted, and we think it will, the other difficulties should not prove insurmountable.

BRITISH TEXTILES IN CANADA.

An excellent report on conditions and prospects of British trade in Canada has been published by Capt. E. J. Edwards, who has just retired from the post of H. M. Senior Trade Commissioner in Canada. Capt. Edwards believes that in very few trades does the proximity of the United States make it impossible for British manufacturers to compete. His opinion is that now is the time for manufacturers from the United Kingdom to regain or obtain trade to which they have more right than a foreign country. The Canadian Government and people, he says, have shown in a marked and tangible way their desire to encourage imports from the United Kingdom in preference to the United States, for not only does the former enjoy preferential tariff, but, owing to recent enactments, the Dominion will, in effect, be giving a further preference, so long as the Canadian dollar is appreciated in relation to sterling and depreciated in terms of American currency, by calculating Customs duty on the Canadian value of the goods imported at the current rate of exchange.

Dealing with the market for wool and woollens in Canada, Capt. Edwards points out that during the year ended March, 1921, the total importations of wool and its products into Canada amounted in value to $67,018,000 and of that amount no less than $52,763,000 came from the United Kingdom, while $12,097,000 came from the United States. The figures for the preceding year were respectively $38,556,000 and $22,400,000, showing a big increase in imports from the United Kingdom and more than a corresponding decrease in those from the United States, during last year.

A considerable decline has taken place in the importations of raw wool into Canada from the United Kingdom, during the past year, but this has more than been made up by increased importations of yarns. In woollen piece goods the total increase of importations has been enormous, says the report. "No branch of industry has been more affected by the recent depression than the woollen and worsted trade, and although at the time of writing, recovery is taking place, the figures for the last financial year cannot possibly be reached during the current year. It must be remembered that on account of the great decline in prices there would have to be an enormous increase in the yardage sold in order to equal last year's trade."

In the matter of the cancellations of contracts, Capt. Edwards endeavors to make clear the points of view of both sides. Much of the trouble, he thinks, was due to the lack of knowledge on both sides. Many of the Canadian importers do not realize that in the United Kingdom a contract is held by most business men to be sacred and inviolable. The Canadian importers are so used to United States business methods that they do not understand why the procedure adopted in the latter country, of giving the customers the benefit of any reductions which may have taken place in the price of goods subsequent to the placing of the contract, should not also be countenanced by United Kingdom manufacturers. Canadian importers have to accept cancellations themselves, and do so in the majority of cases without the slightest hesitation, for they realize that it is the custom of the trade.

Capt. Edwards does not deal with this subject at length, but there are one or two points that arise from it, which he tries to bring home to United Kingdom manufacturers. "A few manufacturers", he says, "insist upon placing all Canadian importers in the one category simply because they have had such unfortunate experiences with a few. This is naturally absurd, for the majority of the principal importers of Canada are firms of the highest standing and integrity and fully the equals in these respects of similar concerns in other parts of the Empire.....

"A still further suggestion I should like to make to United Kingdom manufacturers is that they take particular care to avoid anything which may cause unnecessary irritation. It must be remembered that not only have foreign textile manufacturers rejoiced over the trouble caused by the cancellation of contracts, but they have been quick to point out how they have accepted cancellations, while British manufacturers have refused to do so. These comments have been made in an endeavour to show manufacturers that there is another aspect to the matter, and I have written with the sole object of trying to secure a resumption and extension of trade which has been so satisfactory and amicable in the past between two very great parts of the Empire."

THE ELECTION CAMPAIGN.

Two weeks from today citizens of Canada will vote and elect a new Parliament. The time elapsing between the dissolution of Parliament and election day has been longer than is usual, and up till the moment of writing, at any rate, it must be admitted that, compared with General Elections of other days, the present one has been rather tame. It is not to be thought, however, that the composition of the next House of Commons will suffer in quality on that account. Although there has been very little "political fireworks" the Canadian electorate, both men and women, have been doing some serious thinking and their conclusions are all the more likely to be right than they would have been had their thoughts been disturbed by issues that are not germain and distracted by events deliberately schemed with that purpose in view.

The present election has many unique features for Canada. It is the first time that Canadian women will have voted in such an election, and that in itself has made it practically impossible, with any degree of proximity to accuracy, to prophesy the result of the election. Then, again, up till the present, the fight has always been between two main parties, the Conservatives and the Liberals. But on this occasion, there is another party which has earned for itself the right to rank in

importance with the other two parties. This is the Farmers' Party, otherwise known as the National Progressive Party. The campaign, in the main, has evolved around the leaders of these three parties, the Hon. Arthur Meighen, leader of the National Liberal and Conservative Party; the Hon. W. L. Mackenzie King, leader of the Liberal Party; and the Hon. T. A. Crerar, leader of the Agrarians. The issue was called by the Hon. Arthur Meighen as that of a Protective tariff versus Free Trade, and while both the Liberal leader and the Agrarian leader refused, at the start, to admit that that was the only issue, as time went on, it had to be admitted that the question of a protective tariff for Canadian industries was certainly the most important issue before the electorate, and in our view, that will be the chief issue in the minds of the people when they go to the poll two weeks from today.

The Hon. Mr. Meighen has kept that question to the forefront in all his speeches; he has made it his slogan from east to west. The Hon. Mr. King and the Hon. Mr. Crerar have been handicapped considerably in following Mr. Meighen on that question. While it cannot be gainsaid that there is a considerable feeling for tariff revision and in some quarters, for revision downward, there is, happily, no body of informed opinion advocating Free Trade, and in both the platform of the Liberal party and that of the Farmers' Party, there is a specific demand for Free Trade. True, neither Mr. King nor Mr. Crerar have advocated Free Trade during the course of the campaign, but it is equally true, that neither has denied the clause in their party's platform or stated definitely that that was no longer part of their creed. The leader of the Farmers' Party was honest enough to state that Free Trade was the ultimate aim of the Agrarian movement but he proposed to bring about that condition of affairs gradually, that is, he does not intend to brutally kill off the industries with the stroke of an axe immediately he gets into power, but he will tenderly choke them to death.

The Hon. Mr. King has deliberately evaded the tariff issue. He has fulminated against the importation of live shells, the autocracy of the last Government, and has devoted his attention to several minor issues in which it could not be expected that the people were interested. Thus his campaign seems to have been the least effective of any.

It is freely conceded by all parties that no party will have a working majority over the other two combined. It seems almost certain therefore, that the next Government will be composed of representatives of two or more parties or groups. It would be folly at the moment to prognosticate what these groups will be, and a new movement that is taking place in Quebec, has made predictions all the more difficult. All along it has been stated that Ontario would be the battle-ground. While that may be so, we incline to the view that the men who will count in the end, will hail from Quebec. Quebec will return an almost solid bloc of Liberals, but on the main question that Liberal bloc will be anything but solid. Headed by Sir Lomer Gouin, the leaders of the Liberal party in Quebec, have come out strong and plain in favor of a protective tariff, and it appears to us that the complexion of the next Government will depend very largely on whether the Protectionist Liberals, under Sir Lomer Gouin, or the Free Trade Liberals under Mr. Lapointe, secure a majority in Quebec. Should Sir Lomer's group gain the ascendancy, as we believe it will, together with the strength of the Conservative party throughout the country, which has been growing as the dangers of Free Trade have been emphasized, Canadian industries will be saved from the destructive tendencies of the so-called Progressive party.

"A NINE DOLLAR PLOT."

Recently Lord Curzon, the British Secretary for Foreign Affairs, addressed a strongly worded protest to the Russian Soviet Government, complaining of several violations of the trade agreement with Great Britain, by which the Soviet Government undertook to refrain from carrying on propaganda against the British Empire. Lord Curzon protested, inter alia, that the Soviet Government had paid 10,000 Hungarian kronen to a Hindu agitator and an expert bomb maker.

The Journal of the Canadian Bankers' Association, in its current issue, shows that the matter is not so serious as the Foreign Secretary's note would indicate. "Ten thousand Hungarian kronen", says the Journal, "seems a fairly dangerous amount, but when translated into $9 it hardly seems sufficient to overturn the British Empire."

BOARD OF COMMERCE ACT ULTRA VIRES

The Privy Council in a judgment handed down last week, finds that the Canadian Board of Commerce Act and the Combines and Fair Prices Act were ultra vires of the Dominion Parliament. Considering how thoroughly the Board of Commerce failed to achieve the ends the legislation had in view, it was not to be feared that the Board would be resuscitated, yet it is just as well to have recorded the judgment of the highest Court in the Empire that Parliament cannot validly enact legislation, giving powers to a Board that rightly belong to the respective provinces.

Ostensibly the Board of Commerce was appointed to prevent profiteering and to keep the cost of living down to the lowest level. If the Board had gone about the business in a proper manner it might have been able to accomplish a little towards that end. But the Board failed, and failed miserably, in its object, chiefly because of its inaptitude for the work, the erroneous idea it maintained of the basic problem and its assumption of powers which even the Federal Government does not enjoy.

The protest made by Canadian textile manufacturers two years ago against the operations of the Board of

Commerce, its unwarrantable interference and the demands it made upon the industry, has been justified, not only by the Privy Council's judgment, but by the whole course of events that followed the falling into desuetude of the Board of Commerce.

SOLVENT VERSUS EMULSION WOOL SCOURING.

Professor Alfred F. Barker, contributes an interesting article to the Journal of the Leeds University Textile Association, on "Solvent v. Emulsion Wool Scouring and Press Packing", says the Dyer and Calico Printer. He recalls that during the war two urgent questions arose with reference to the shipment of wool—whether, without detriment, it could be more densely packed to save space; and whether it could be secured before shipment, thus saving 25 to 50 per cent. in weight. Experiments were carried out with two bales of merino wool, which was tested after being in storage for three months at the Bradford Conditioning House. Professor Barker says that solvent scouring is much more stable and reliable than any emulsion scouring, and he gives the following summary of the results shown by the tests.

Press packing does not seem seriously to affect either greasy or solvent scoured wools. The suggestion is given that solvent scoured wools may be more tightly press-packed without loss in "tearage" than greasy wools. Although scoured wools open up, even for combing, better than would be expected, there is no comparison possible between the shipping of solvent scoured and emulsion scoured wools. There appears to be little difference between the yields of emulsion scoured and solvent scoured wools. What difference there is is usually favourable to solvent scouring. Solvent scouring gives, in comparison with the best conditions of emulsion scouring, a stronger fibre and under bad conditions of emulsion scouring, a much stronger fibre.

Solvent scoured wools work more lofty in the comb than emulsion scoured. There is little difference in the "tearage," but what difference there is is invariably favourable to solvent scouring. The length of fibre is better retained in solvent scouring than in emulsion scouring. Solvent scoured wools give less "spinning-efficiency" as compared with emulsion scoured wools.

Professor Barker adds that there is little difference in colour between the wools in the finished state. Such difference as there is up to the present must be conceded to the emulsion scoured wools. No serious attempt, however, has been made to investigate such matters as the electrical state of the bath and molecular movement in solvent scouring. Until this is done the risks will be very great in cleaning dirty wools containing dung, etc., on the solvent method, the risk of staining throughout the bulk being too great. Solvent scoured wools are slightly more difficult to mill, but, again, this is probably due to a lack of apprehension of the problems involved, and, following systematic research, will probably be corrected.

Although Yorkshire may plump for the shipment of wool in the greasy state, says Professor Barker, the problem may be entirely changed if solvent scouring ever proves a practical proposition. He points out that in dealing with 70's quality merino the loss in weight by solvent scouring is 26 per cent., while by emulsion scouring it is 43 per cent. If eventually solvent scouring is adopted in wool-growing countries, the shipping companies should be asked for favourable terms, and it would be necessary to instal presses capable of exerting the additional pressure required. Professor Barker adds that the subject of press-baling is becoming increasingly important to both the wool grower and the home manufacturer, and he hopes for improved efficiency and economy in the transference of wool from the sheep farm to the factory.

COTTON YARNS AND FABRICS.

Large Increases in Imports from Great Britain.

While the importation of yarns and threads from the United Kingdom increased considerably in the past year, in certain lines further trade might be captured, states the Report of H.M. Senior Trade Commissioner on the Conditions and Prospects of British Trade in Canada.

In cotton fabrics there have been great increases in imports from the United Kingdom, but it was very difficult indeed to make any conjecture regarding the future, for, although the outlook was brighter at the time of writing, there was comparatively little buying, except for immediate requirements. Certain United Kingdom manufacturers who recently visited Canada, and, in company with their local representatives, called upon the trade and obtained from them and the general public a more intimate knowledge of Canadian requirements, are undoubtedly doing better business at the present time than similar manufacturers who have not shown this enterprise.

One of the largest wholesale dry goods marchants in Canada states that foreign competition has been very aggressive in cotton piece-goods, cotton quilts, cotton towels and towellings, and cotton underwear. This competition comes particularly from the United States. Local production is making rapid strides both in point of quantity and quality, but it is felt by many members of the trade that United States manufacturers are affected by this to a greater extent than those in the United Kingdom.

Sky Bros., 6 Wellington St., Toronto have recently installed a Harley-Kay winder. Another winder is being shipped this week to H. C. Fairfield of Winnipeg.

Harley-Kay, Ltd., have recently received from New Zealand a substantial order, covering approimately 50 of their Full Automatic Rib Hosiery machines, shipment to cover a period of two years.

Improvement in Toronto District

In Nearly All Lines of the Textile Industry Business Is Brisker And A Better Tone In Evidence.

By our Toronto Correspondent.

The fact that the improvement of business in the textile trade, which has been noted in the last few weeks, is still being maintained in Toronto, and, in fact, in Ontario generally, is being demonstrated in all lines. There is general agreement among manufacturers and wholesalers, in practically all branches of textiles, that things are looking a good deal better than they have done in a long while. Indeed, one wholesaler told the writer that he did more business in one half of last month than he did in the two preceding months.

Mills making hosiery, those making underwear and cloth mills are all very active. Many of them are working to capacity — this is particularly the case with mills running on specialties in clothing. Yet, while this is the general rule, one could name some cloth mills that are idle. The truth is that the capacity at which a mill is running just now is a pretty good test of the progressiveness or otherwise of that mill's management. The mills that are running overtime—and there are to-day quite a lot of them in Ontario—are progressive and up-to-date mills which have got out good seasonal designs.

Reasons For Improvement.

No doubt, the colder weather has had a good deal to do with the increase in the demand for both underwear and overcoats, etc. Many people in the trade seemed to imagine that the public were well supplied with overcoats. But the first touch of winter has revealed the fact that they are not so plentiful as it was imagined, in some quarters that they were. It is, thus, probable that, the increased business in the demand for textiles is of a seasonal character. But, behind the purely seasonal demand, is the trade which is due to a resumption of buying or something more approximating to the normal scale than has been the case for a long while. People had stopped buying for so long that it is now absolutely necessary for them to replenish their shelves or their wardrobes, as the case may be.

But is the present activity going to be "carried over," so to speak, into the New Year? One finds that many, who should be in a position to judge, have grave misgivings on this head. The situation is far from as settled a one as could be desired. And opinion to the effect that, unless manufacturing costs in cloth mills, and also coats in the garment trades, are reduced, those industries will encounter another period of slackness in the New Year.

Reduce Manufacturing Costs.

Lower prices are necessary, and it is only fair to say that they are coming. Labor is coming down gradually. So is the cost of materials. Indeed, wools, to-day are lower in price than they ought to be. The cost of dyes and chemicals is also coming down. If manufacturing costs are still too high, as wholesalers and retailers alike contend that they are, the fault, in some cases, lies with the manufacturer and his inability to keep a sufficiently firm grip on his producing organization. That grip it is difficult for a manufacturer to maintain always unless he himself is a properly trained textile man. And not all our textile manufacturers, by a long way, are themselves properly trained textile men.

In talking over this matter with me, the other day, a high authority gave it as his opinion that, in some factories, quite a bit of graft went on. Materials, etc., were sometimes bought from firms that made it worth the while of the man with the purchasing authority in a manufacturing organization to buy them. Now, if this sort of thing obtains to any extent—and one is bound to say that one hears of it quite a lot—it is small wonder that manufacturing costs don't come down. It would be wrong to make too much of this factor. But it would be a good thing if manufacturers would assure themselves that no graft of any kind goes on in their mills. If is does go on without their knowledge, they ought to get wise to it forthwith. If they are wise to it, and wink at it, instead of checking it peremptorily, then they are acting detrimentally to their own interests and to those of the textile industry at large.

Cotton Mills Active.

It was mentioned, just now, that hosiery mills are among the most active in the textile industry. Several mills, in fact, both as regards underwear and hosiery, are not taking orders for delivery this season. Right here, a word of caution, with regard to the manufacture of hosiery, may not be out of place. It is notorious that quite a few mills have gone almost headlong into this line of manufacture. Unless those who do so understand the manufacture of hosiery from A to Z, unless they know their costs and figure their overhead properly, they are liable to make a mess of things.

Mills making cotton goods are wonderfully busy. But it must not be forgotten that raw cotton has very nearly doubled in price within the last five weeks or a little more. At the moment of writing, it is about twenty cents a lb. The test will come when the mills making cotton goods have to buy their material at the higher price, and, as a consequence, put up the price of their products. It may well be doubted whether, with retailers and the public alike, vehemently insisting that prices in all textiles should be lower, to-day's activity will be maintained then. Mills making silk fabric and silk-throwing mills are both also very busy at present.

Artificial Silk Industry.

Speaking of silk reminds one that artificial silk certainly ought to be made in this country. Why it is not is a mystery to many people. For the demand for it to-day is amazing, and that demand is getting bigger every year. Not very long ago, braids used to be made from mohair. Now, almost altogether, they are made of artificial silk, as is so much of the neckwear worn to-day. And this artificial silk is all imported. Why? Here is an industry which could well be carried on in Canada and which would bring a fortune speedily to the man who starts it properly and intelligently. It is an industry warranted by the demand.

International Textile Exhibition at Boston

An Unqualified Success From Every Point of View.

The International Textile Exposition at Boston, was the largest exhibition of textile machinery the world has ever seen. In connection with the convention of the National Association of Cotton Manufacturers the exposition turned Boston into a textile city for the week, linking up consideration of the problems of the trade with actual demonstration of recent material developments in the industry.

More different styles and makes of cotton, wool and silk machines were assembled, probably, than the oldest textile veteran had ever before seen, and there were large displays of piece goods and chemical exhibits. Visitors saw not only the almost human machines which make the fabrics but every process of production from the raw material to the finished cloth. In one booth a dress was "made while you wait," from the raw cotton to fitting it to the human figure. In another a machine tied knots at the rate of 250 a minute. More than 400 exhibits were on display, their value totaling more than $2,000,000. Keen interest was shown not only by cotton men from the convention, many of whom bought machinery, but also by the general public, interested in the processes by which their apparel is produced. Many companies sent parties of superintendents and overseers to see the new machinery.

N. A. C. M. RESOLUTIONS.

U. S. Cotton Manufacturers Say there should be no Further Delay in Enacting an Adequate Protective Tariff Bill.

The National Association of Cotton Manufacturers in Convention at Boston, by resolution, approved of the effort which the United States Shipping Board is making to secure for American ships the carriage of a proper share of imports of Egyptian cotton destined for American consumption.

Another resolution insisted that American merchandise and property abroad be given as good and as favorable protection as that accorded the merchandise and property of any other nations.

The resolution on the Protective Tariff and American Valuation reads as follows:—

Whereas: The National Association of Cotton Manufacturers, in convention assembled, representing the leading producers of cotton textiles and products entering into their manufacture, being deeply concerned over present conditions in our country, do hereby,

Resolve, That in view of the present depressed condition of American industry, the abnormally low costs of production abroad and the unprecedented depreciation of currencies of countries seeking to sell their products in the markets of the United States, it is our solemn conviction that it is imperative that there be no further delay in the enactment of an adequate protective tariff bill, and that Congress and the Administration proceed at once to complete the program to which they stand committed before the nation; and be it further

Resolved: That we especially emphasize the fundamental necessity of the American valuation provisions of the tariff bill already passed by the House of Representatives, as a means of standardizing import values which today are indeterminable, due to wide variation in value of foreign currencies and wages in relation to the American dollar. A standardization on the basis of American valuation is the only means of insuring to other nations equality with one another in our markets and will neither prohibit importations nor increase the cost to our people of American made goods.

NEED FOR FUNDAMENTAL RESEARCH.

No Other Industry has Made Greater Progress in Mechanics, and None has so Completely Failed to Make the Most of Physics, Chemistry and Biology.

Harrison E. Howe, secretary of the National Research Council, at the Convention of the National Association of Cotton Manufacturers, held at Boston, said a few interesting things when the convention was discussing the need of Fundamental Research.

"If the textile industry had begun 20 years ago the application of the science we know, there would have now been formed an underlying science upon which applied research could build and without which it could not build safely," said he.

"I am from the industrial side of research myself," continued Mr. Howe, "but I realize that the longer I go along in it without the support of fundamental research you cannot make satisfactory progress in applied science.

"Suppose that shortly after the Civil War the surgeons had said, 'Now we must have a more efficient way of locating bullets in men's bodies,' I think it would be safe to say that people on an order for that sort of invention would have endeavored to find a better type of probe. I don't believe an order for such an invention would ever have given us X-rays for that type of work.

"We find these things in fundamental research, and then we find out how to apply them. I think if someone had said to the originator of the Tungsten lamp, 'We must have more efficient incandescent light,' he might have worked on some other line than the line he did work on. What he did was to find the conductivity of inert gases as a matter of fundamental research, and in what he learned then, he learned that electric light bulbs are more efficient when filled with nitrogen gas then when partially empty under a condition which is supposed to be that of a vacuum, and that result combined with ductile tungsten means to your manufacturers and to the public that if we were still using carbon lamps the total cost to the country would have been not less than $400,000,000 a year.

"I am entirely in sympathy with applied research, but, gentlemen, the textile industry in this country has not as yet found out the sciences upon which you must build. If your go into the exhibition here in Mechanics Hall you will find most wonderful advances in mechanical science. I think I would be willing to argue that no other industry has made greater progress in mechanics as applied to hand operations than has the textile industry, and I am quite willing to take the other side of

the argument and show that no other long established industry has so completely failed to make the most of physics, chemistry and biology as has the great textile industry.

"Some of you have been bored by hearing me present these things before. But it takes a lot of optimism, men, to try to get people to do for themselves things which they might do to great advantage. So I shall not argue with you but express the hope that you will do something and do it now and get in the race."

A SHUTTLELESS LOOM.

Cloth Woven Without A Shuttle On Exhibition At Boston.

Weaving cloth without the use of shuttles may be the next advance in the textile industry. Several wonderful inventions have already been announced and at the International Textile Exposition at Boston, the United States Bureau of Foreign and Domestic Commerce, which had a room full of exhibits at the exposition, was placed in a position to give some details concerning a shuttleless loom that has been produced in England. Some cotton cloth was also exhibited which was made by such a loom. For speed, simplicity and perhaps economy it promises another important step in the textile business, and it attracted wide attention from mill men when it became known that the cloth was on exhibition.

Announcement concerning this loom comes from the Esmith Loom and Fabric Company of Bradford, Eng., through the American consulate at Bradford. The explanation of the automatic shuttleless loom is that the weft can be supplied from two "cheeses," one on each side of the loom, so that a supply of weft can be put up that will last a day or more and the loom can be left running, even through the meal hours. A weaver will be able to tend twenty to thirty looms. Not only is the shuttle eliminated, but there is no need of spinning the weft onto bobbins for any shuttle, and the cloth is woven with two picks at once.

Employment in U.S. Depends on the Tariff

President of National Association of Cotton Manufacturers Reviews Conditions in Textile Industry at the Annual Convention. — Tariff Protects Labor and Gives Higher Standard of Living and Comfort.

This meeting was called later than usual this year in order that we might co-operate with and endorse what is said to be the greatest textile exhibit ever held in this country. As manufacturers we can congratulate those in charge of the exhibit and we can compliment our machinery manufacturers, the exhibitors, who have developed thair labor-saving and efficient machines to a point well in advance of any other country in the world. Their ingenuity and vision is one of the reasons why we can pay so much larger wages than other countries and live.

Since our spring meeting our industry has traveled the path of other lines of industry, through deflation, uncertainty, worry, and loss, and progress to better times has been slow. In April we were hopeful of a speedy clearing up of our Legislative problems, taxation, the tariff, and other business uncertainties.

Unfortunately, these problems are still before the business man, and Congress takes its time in carrying out the program of the Administration. This country is not dependent on other countries for prosperity, and constructive legislative work this summer would have greatly relieved unemployment this winter.

The foreign situations bring in so many new angles to the tariff question, that the representatives elected on a protective tariff platform, seem unable to carry into effect their promises. England's Safeguarding of Industries Act went into effect October 1 and is a tariff for industries needing it. In the meantime, more cotton goods are coming in, and to that extent our labor and mills are idle.

Employment is greatest in those countries where wages are low, and unemployment the most where labor is highly paid. The United States shows the largest number of unemployed and Germany the least. France and Belgium with their lower wages are better employed than England. England exports three-fourths of its cotton goods to India, China, Africa, and the poorer countries. These countries have had all they could do to feed themselves. Cotton goods have been so high that they could not buy. This has closed the English mills and caused great unemployment. Business will not be normal until these countries are buying freely. In the meantime, the finest market in the world is the United States, and all the European countries would like to get it.

Necessity of Tariff.

The United States has large debts and big expenses. Therefore, we must run our industries and employ our American labor, in order that business may pay these debts by taxes. This can only be done by a tariff which will protect the United States market for the American laborer and manufacturer. Cancel the debts if need be, but give employment before anything alse, to American labor.

As President McKinley often stated, "The tariff primarily protects American labor." It gives the highest standard of living and comfort of any country in the world to labor.

The railroads, according to statements printed recently, have capital invested of sixteen billions. This compares with twenty-two billions in manufacturing. The purchasing power of the railroads, which may be estimated at forty per cent. of the total, has been restricted for such a long period that it has been a large factor in holding up normal business. If the railroads become purchasers in the near future, they will help materially to start business.

Freight rates are too high, caused principally by the high railroad labor cost. The rates cannot come down until labor des. It would undoubtedly be a benefit to the economic situation if railroad income was increased to a point where they became purchasers, and gave employment to the machine shops and steel mills now idly awaiting orders. Purchasing power is the method by which business will return to normal.

The supply of raw cotton is a serious matter. It is estimated that over two hundred million dollars worth

of cotton was destroyed by the boll weevil. The boll weevil, contrary to expectations, on which it was figured that after an area was attacked it would not be again attacked, is now prevalent from Texas to the northern boundary of the cotton belt, and is about as bad in one place as in another.

The present cotton crop, if all the spindles in the world were operating, would not be sufficient to keep them going until the next crop, and a serious feature is that there is a possibility that the crop may be even smaller in future years, because of the boll weavil. It can be easily seen that a crop disaster would be a serious thing for the cotton manufacturer and employes. The National Council is working on plans which we are hopeful may be of some benefit in finding a method of eradicating the boll weevil.

The whole textile industry faces too much uncertainty in regard to the purchase of cotton. The price fluctuates to such an extent that the manufacturer cannot plan his work, nor can the garment manufacturer be certain of any price on which to base his product. There are few industries, of any, in which such a speculative feature is present.

On the present condition of cotton, the buyer and the ultimate consumer must not be surprised if cotton prices are higher. This is contrary to the statement of most students, who say that every commodity must be lower during the coming year, but the condition of the cotton crop makes the opposite necessary, and we manufacturers can only hope that the consuming public will recognize this exception to the general line of prices.

Optimistic About Future.

Looking into the future, the general opinion is that the cotton industry is headed for prosperity with a shortage of production when demand becomes normal. The forty-eight hour week meant a curtailment of twelve per cent. This, with the curtailment in production, means an enormous shortage of goods. The whole economic condition is improving. The textile industry will improve as fast or faster than the majority of industries.

Business sentiment is improving steadily. Copper and oil have advanced. Railroad conditions, measured by earnings and car loadings, are better. Unemployment has decreased. Money is easier. Liberty bonds are up seven per cent. from their low point. The reserve of the Federal Reserve system is steadily rising, and discount rates are at five per cent. in our districts.

All of these things are good signs, and they point to but one conclusion, which is full time and good business. Some economic fallacies are still to be found, such as the curtailment of production in order to maintain high prices, but small production is not constructive, and does not increase wealth.

Hope, which would place the economic condition of the world years in advance if it materializes successfully, exists in large measure. It is exemplified in the Congress for Limitation of Armament meeting in Washington in few days. If this can be carried out, the nations of Europe, who are struggling under such enormous difficulties, can easily pay their debts. Our own debts would be paid, and taxes made lighter. This promises to be one of the events in the economic world's history of the present and future, and let us hope that it accomplishes the purpose that President Harding wishes for.

Some Exhibits Described

THE STAFFORD COMPANY.

The Stafford Company had six automatic looms in operation in the same space that it has occupied at all the past shows. There were 3 bobbin-changing and 3 shuttle-changing looms as follows:

1st.—40" automatic bobbin-changing loom making plain [illegible] warp 36s filling 40s x 64.

2nd.—32" bobbin-changing denim loom, making 28" 2.40 yard denim, 9 3-4s warp indig blue, 10 3-4s, filling, black and [illegible]

3rd.—36" bobbin-changing loom weaving chambray warp 30s, filling 40s, 72 x 60.

4th.—90" shuttle-changing loom, weaving broad sheeting, warp 22s, filling 22s, 72 x 68.

5th.—40" shuttle-changing fine goods loom, cop filling, weaving [illegible]

6th.—50" automatic shuttle-changing silk loom weaving silk shirtings, warp 28 to 30 deniers, filling 4 thread tram, 60 de[illegible]

All of the above looms were driven by direct connected motors.

MASURY-YOUNG COMPANY.

Masury-Young Company, 198 Milk St., Boston had a very attractive exhibit in space 651 showing the "hubrik mine" of greases for textile machinery used by many of the largest mills on the continent. Their Scotch wool oil they claim is washed out very easily with less soap than other similar products. It is stainless and contains nothing that will create a chemical compound that will injure machinery.

Scotch Wool Oil has been on the market fifty-two years and no case has ever been known where it formed oil blotches. Masury-Young Company offer Canadian mills the benefit of 64 years experience. Their oil is scientifically tested in their [illegible]

THE PERMUTIT CO.

The Permutit Company occupied booth No. 83. The principal and most interesting exhibit of the Company was a model of water softening and filtering equipment. This model has been constructed at great expense in exact duplication of the very large commercial equipment which they manufacture. It is about four feet long and made exactly to scale after the design of a large unit that delivers 100,000 gallons per day. Even the small pipes and strainers in the interior of the water softening tank have been reproduced in miniature and the model represents a very striking and clever piece of workmanship.

The Permutit Company manufacture all types of equipment for treating water to render it pure, soft and correct for use in all branches of the Textile trade and other branches of industry.

BORNE SCRYMSER CO.

Borne Scrymser Company, 80 South St., New York, showed in space 93, samples of Breton oil for wool, saxon oil for worsted, Breton mineral products for scouring and finishing of cotton as well as samples of lubricating oils and greases for textile mills.

They showed wool and worsted materials in various stages of manufacture, from the raw stock to the finished products, covering the use of Breton oils for wool.

The works of Borne Scrymser Company are at Elizabethport, N.J. and for 47 years their products have been used extensively in the textile field.

CRANE LIMITED.

Crane Limited, St. Patrick St., Montreal, had a very attractive display, in spaces 518 and 519, of their miscellaneous power plant piping with valves, fittings and steam specialties.

FRANK MOSSBERG CO.

Mossberg steel products for the textile industry including pressed steel reels, beams, spools, beam heads, jack spools, bobbins and drop wires for loom stop motions made by Frank Mossberg Company, Attleboro, Mass., were shown in booth 66. Walter I. Tuttle is President and General Manager of the company.

ATKINSON HASERICK & CO.

[illegible] Haserick & Company, 142 Congress St., Boston, agents for Dobson & Barlow Ltd., Prince Smith & Son, Samuel Law & Sons Ltd., exhibited in space 251, the Tunstall Comber built by the Alsatian Machine Works Ltd., Worcester, Mass.

THE GREIST MANUFACTURING CO.

The Greist Mfg. Co., New Haven, Conn., exhibited various styles of ring travellers, spinning rings and drop wires. They claim for Greist spinning rings a superior finish which comes as near as possible to eliminating friction. Another feature is the curved inclined flange which gives greater clearance between the flange and the top of the traveller for the yarn to pass through. Thy also claim the rings are highly accurate, that they require no breaking in, and are hardened as hard as it is possible to make steel.

WILLIAM FIRTH.

The exhibit of William Firth, 200 Devonshire St., Boston, was in charge of J. J. Smith, R. C Crosby and W. J. Smith. Wm. Firth is sole importer of Asa Lees & Co., Ltd., machinery for cotton, wool and worsted; William Tatham Ltd., cotton waste machinery and a number of other firms including Joseph Stubbs, Geo. Orme & Company, Goodbrand & Company. Wm. Firth is manufacturer of Firth Vacuum specialties, dustless card stripping apparatus and general machinery cleaning from central station.

JOHN HETHERINGTON & SONS.

John Hetherington & Sons, Ltd., 178 Devonshire St., Boston, featured particularly their six head 12½" lap Nasmith Comber complete with aspirator giving a production of 850 lbs. per week of 48 hours. This firm are makers of all kinds of cotton spinning, scutching, carding, preparing, spinning and doubling machinery. Mr. A. S. Fuller was in charge of the exhibit.

CROMPTON & KNOWLES.

One point of attraction of the exposition was the large space occupied by the splendid exhibit of weaving machinery made by Crompton & Knowles Loom Works, Worcester, Mass. The goods actually produced on the looms operating were shown and this feature added very materially to the interest of the exhibit. The following machinery was shown in actual operation:

Automatic heavy worsted loom for weaving of plain and fancy worsteds, shephard plaids and overcoatings. In case a filling or warp thread breaks the machine is automatically stopped by the operation of the filling or warp stop motion.

Automatic intermediate worsted loom equipped with the rotary type of magazine and especially adapted for weaving of serges and tricotines.

Narrow fabric loom, automatic gingham loom equipped with four-cell shuttle box and four-cell magazine demonstrating the use of four colours of filling.

Automatic cotton blanket loom, automatic terry towel loom, automatic silk loom which was equipped with shock absorbing crank connectors especially desirable on a light loom running at a high rate of speed.

Crompton & Knowles Loom Works have recently established a series of four warehouses in main textile centers so as to be able to give their clients every benefit in connection with service.. So complete is their organization that they maintain a metallurgical laboratory where an exhaustive study is made of the iron and steel which enters into their supply parts. F. W. Howe, president, I. W. Verry, Vice-President; R S. Frost, P. B. Heywood and S. B. Alexander Jr., were in attendance.

J. H. WILLIAMS COMPANY.

J. H. Williams Company, Millbury, Mass., exhibited in a very complete line of shuttles, plain, hand-threading and automatic, for cotton, woollen and carpet looms. Wire heddles for cotton, woollen, worsted and silk looms. Heddle frames for cotton woollen, worsted, silk and narrow fabric looms. Mr. G. E. Dean was in charge of the exhibit.

A. KLIPSTEIN & CO.

A. Klipstein & Company, St. Peter St., Montreal, had spaces 700 and 701 for an exhibit of samples of chemicals, dyestuffs, oils, etc.

WHITIN MACHINE WORKS.

Whitin Machine Works, Whitinsville, Mass., exhibit comprised the following machines in full operation: one 40" revolving flat card, one model D-2 combing machine, one model E combing machine, one model G combing machine, one 4 delivery drawing frame, one 7x3½" roving frame with 96 spindles, one model B spinning frame with 36 spindles, one model D spinning frame with 48 spindles, one model C spooler with 24 spindles, one model B twister with 36 spindles, one model D twister with 24 spindles; also samples of flyers, spindles, rings, etc., of their make.

H. W. BUTTERWORTH & SONS.

H. W. Butterworth & Sons Co., Philadelphia, exhibited a straight tentering machine with patent automatic clamp chain, showing recent improvements; a Foxwell guider; a rack and gear compensator; a Simpson patent cloth winder; a Simpson patent three-needle sewing machine. The latter incorporates some very recent changes which simplify and add considerably to its efficient operation. W. J. Westaway Co., Ltd are the Canadian Agents for this firm.

U. S. BOBBIN & SHUTTLE CO.

U. S. Bobbin & Shuttle Co., Providence, R.I., in space Nos. 59 and 60 is a very attractive exhibit, in keeping with its nationally known reputation as manufacturers of the highest grade bobbins, spools and shuttles. Color schemes and presentations of samples combined to make this booth one of the brightest spots in the Show. All the interesting developments in this concern's line were presented.

HENRY L. SCOTT & CO.

Henry L. Scott & Co., Providence, R. I., whose Canadian Agents are W. J. Westaway Co. Ltd., Hamilton, Ont., are showing testing machine, rubber and fabric tester, hand yarn tester, hand cloth tester, combination tester, single strand tester, automatic power yarn tester, Universal tester inspector, twist counter, Swift horizontal tester, roving reel yarn reel and scale and inspecting machines. Henry L. Scott Enoch Bolton and David C. Scott are in attendance.

TEXTILE FINISHING MACHINE CO.

The Textile-Finishing Machinery Co., Providence, R.I., E. A. Rusden, treasurer and manager, builders of machinery for bleaching, mercerizing, dyeing, drying, printing and finishing textile fabrics of every description, who are always glad to furnish estimates, drawings and all engineering work for complete plants was located at space No. 118. Whitehead Emmans Ltd., 285 Beaver Hall Mill, Montreal, their Canadian Agents were represented at this show by M. T. R. Whitehead.

PRECISION MACHINE CO.

Precision Machine Company, Milwaukee, Wis., exhibited the "Universal" line of counters, thread meters, checking counters, electric counters and checking devices. Mr. B. Rosing expects a large sale for their electric counter connected by wire with any machine or operation in the plant and installed in the superintendent's office. These machines give the impression of being constructed with the utmost care for sturdiness and accuracy.

KRON SCALE CO.

Kron Scale Company exhibited a complete line of automatic dial scales especially adapted to textile work. One scale that attracted considerable attention was of the portable type for weighing cotton bales. The Canadian office is St. Alexander St., Montreal.

SCOTT & WILLIAMS.

Scott & Williams Inc., New York whose representatives in Canada are W. J. Westaway Company, showed in operation their new model H-H machine for producing ribbed top half hose complete. Also a K. machine, a regular hand transferred model B-5 machine, a B-3 machine for making misses' ribs and infants' half hose also the plain underwear machine.

STEEL-HEDDLE MFG. CO.

Mr. Robert J. Freitag the well known secretary of Steel Heddle Mfg. Company, 2100-2118 West Allegheny Ave., Philadelphia, was in charge of their exhibit in space 111. Their exhibit showed one loom in operation and included their line of flat steel heddles and frames and improved drop heddles and wires for weaving all grades of textiles.

Bahnson Company, Winston Salem, N.C. showed in space 203 the Bahnson humidifier. The big feature of this humidifier is its flexibility each machine being a complete unit.

Howard Brothers Manufacturing Company, Worcester, Mass. had an exhibit in spaces 41-42 the manufacture of card clothing and also a small card showing the carding of stock. They also showed various sizes of heddles.

Sarco Company, New York, showed in space 207 Sarco automatic temperature regulators for use on driers, slashers and size coolers. Peacock Brothers Ltd., 179 Delorimier Avenue, Montreal, are the Canadian agents.

The Rogers Fibre Company, Boston, Mass., who are represented in Canada by the W. L. Westaway Company had in space 18 an exhibit of letheroid fibre seamless roving cans, trucks, boxes, combination doffing trucks, taper baskets, barrels and waste baskets.

Canadian Textile Concerns

F. H. COPP, LIMITED, PORT ELGIN, N. B.

The importance of industrial establishments to a town can scarcely be over-estimated. As a rule a town grows around an industry. As the industry expands and develops the town must of necessity grow, more houses being required to provide homes for the workmen, more money placed in circulation, larger and better school facilities, better streets—in fact a bigger and better town. Of course there are industries and industries. Some keep on the even tenor of their way through so-called good times and hard times. Some industries are devoted to the manufacture of necessities; others to the manufacture of luxuries.

Of course opinions may differ as regards what are necessities and what are luxuries. Articles which may be luxuries to one man may be considered necessities to another. There are different standards, depending upon the station in life that is occupied by the people concerned. To the man of affairs, who has many interests to look after, an automobile could reasonably be considered a necessity, while to the poor man, who works ten hours a day and who would use a car only for pleasure an automobile would undoubtedly be a luxury. This suggests the question of what industries are best for a town, those which manufacture a product that everyone must have or those whose output appeals only to a few.

Supposing we were to decide to build a town; to begin from the beginning, the question of what industries to pick would naturally claim early attention. The decision to select industries whose products appeal to the multitude, would seemingly be recognized as sound policy by those who gave the subject reasonably careful consideration. An industry whose product was some exceedingly expensive article used only by the wealthy, would seem to be a rather doubtful proposition, while a factory, which produced something required by everyone would "look good" to the promoters of the model town.

Of course model towns are few and far between. Towns as a rule have to be satisfied with what they have in the way of industries. True the live wires of a community may go out after new industries, in which event the test mentioned above can very fairly and profitably be applied. The same test can be applied to by the investor, who naturally wants to put his money into an enterprise which promises safety and permanency, together with uninterrupted dividends.

An industry of the right sort, one whose products are necessities, is that of F. H. Copp, Limited, manufacturers of "Everlasting Brand" pure wool tweeds, homespuns, cloaking, blankets, laprobes, stockinette and yarn. In our Canadian climate woollens are a necessity for everybody, rich and poor alike. It is only a case of what brand is bought, whether the slogan "buy at home" means anything or whether distant fields have a peculiar attraction.

Years ago a woollen mill, where the farmer's wool was carded and their yarn spun, was established in Port Elgin by the late John Read and Sons, who operated the plant for a number of years. Then came a period when the mill was burnt down and the task of bringing the industry back to life fell to Mr. Frank [illegible] enterprise to whom Port Elgin owes a very great deal. Mr. Copp purchased the original mill building, which he moved to a site belonging to him on Shemogue Road, about a hundred yards from Main Street. This was in 1916.

During the first year the mill was operated as a custom carding plant, the farmers bringing their wool as in the old days. In 1917 Mr. Copp began making yarn, the number of his employees increasing from two or three at the start to ten when the mill got down to making Copp's Everlasting Brand. The goods turned out met with popular approval and Mr. Copp was encouraged to extend the field of his operations.

In 1919 the business was taken over by a joint stock company, known as F. H. Copp, Limited, which continued to develop the industry with gratifying success. Additional plant was installed and the work of manufacturing "Everlasting Brand" blankets and heavy cloth was begun, about fifteen being employd to produce the Copp products.

In 1920 another story was added to the mill building, still more machinery was installed and many changes looking towards greater efficiency and increased production, were made. About forty hands were employed during 1920. The addition of still more machinery of modern and up-to-date design made possible the manufacture of fine cloths, which are unusually good. Copp's cloth is well and carefully made from pure wool. The designs are pleasing and a suit and overcoat made up from these goods are something of which anyone may well be proud. During the year 1920, too, lap robes and mackinaw cloth were added to the list of the goods turned out by the Copp mill.

During the last winter, when many other plants were closed down, the Port Elgin mill was kept going steadily, thus giving employment to a goodly number and adding materially to the prosperity of the town. During the present summer, too, the plant has been in operation without a break, many orders having been received from particular buyers, who passed over the product of other firms and bought Copp's Everlasting Brand. This fact is gratifying not only to Mr. F. H. Copp, through whose untiring efforts the industry was made possible, but also to the town of Port Elgin which profits by the enterprise vastly more than any individual can possibly do.

The mill consists of a two-story building 140 by 40 feet in size; a dye house, 50 by 18 feet; a warehouse, 26 by 30 feet; a power house and picker house. In addition to these buildings the company rents for warehouse purposes, the concrete block building across the street, formerly occupied by the Webster Dry Cleaning Co. Power is supplied by a 90 H. P. Robb boiler and a 75 H. P. Wheelock engine. The company owns a dynamo and so are enabled to generate their own electric current. The woollen plant is known as a three set mill, that is to say the machinery consists of three sets of cards, three spinning mules, and sufficient weaving and finishing machinery to turn into cloth all the yarn, which the cards and mules produce. Its present capacity is 250 yards of cloth per day.

In the Port Elgin mill various processes are carried on including picking, spinning, weaving, finishing, etc. The wool is taken as it comes from the sheep and passes through all the stages of washing, picking, dyeing, etc. Necessary water for the mill is obtained from artesian wells, whence it is pumped into a big tank by steam.

Waste wood for fuel is obtained from the saw mill of Messrs. J. and C. Hickman, Limited. Not only is this arrangement advantageous to the Woollen Mills, but as well to the Hickman Company who in times past were obliged to pay for hauling and burning the refuse material, which now produces steam to drive a flourishing industry.

Last year an acetylene welding outfit was installed thus enabling the company to effect repairs in record time.

Near the mill is a house owned by the company and occupied by the superintendent. Owing to the house shortage they were last year obliged to purchase two other houses in order to provide homes for their employes, who for the most part are experienced operatives brought in from outside points.

The goods go largely to Montreal, Ottawa, Quebec and Toronto, although the Maritime market is growing steadily. Shipments go as far west as British Columbia and the fact that repeat orders come as the result of the first sale, augurs well for the future of this young industry. The cloth is sold to the jobbing trade.

The company has five directors, viz., F. H. Copp, president and general manager; Fred T. Tingley, H. M. Wood, (Sackville); William Grant, Port Elgin; and Alex Tompson. B. A. Turner is secretary. Mr. Thomson comes from Preston, Ontario, and is a brother of Roderic Thomson, manager of the Renfrew Woollen Mills of Renfrew, Ont. He recently purchased an interest in the Copp mill and is moving to Port Elgin with his family in October. For several years Mr. Thomson has been with George Patterson and Sons, Limited, of Preston, and has had a life experience in the woollen business in Canada and the Old Country. He will have full charge of the manufacturing end of the business, leaving the office work and selling to the general manager, Mr. F. H. Copp.

In order to guard against fire, extinguishers are place dthrough the mill while fire buckets, filled with water, stand in readiness to put out incipient conflagrations. If necessity arose two steam pumps could be utilized to fight fire.

Notwithstanding the discouragements incident to the establishment of a new industry and to the trying period through which the world is passing, The F. H. Copp, Limited, has stood up well and is every day getting on a firmer foundation. The shareholders include a number of men who are strong financially, those who take a keen interest in the enterprise and are prepared to back it to the limit. This means that the F. H. Copp, Limited, stands in an enviable position and its permanent success may reasonably be predicted. The general manager of the company, Mr. Copp, is to be congratulated upon his tireless energy and faithful efforts to make the enterprise a success. He deserves to succeed and undoubtedly should have the moral and financial support of Port Elgin, which will profit so largely by the expansion and development of this important industry.—"The Busy East".

Mr. Leslie Biggin, manager of the Canadian Wool Company, Limited, entertained a number of local and visiting wool dealers at the Scarboro Golf and Country Club, Toronto, on Saturday, Nov. 5th. Among those present were R. A. Paget, G. M. Pinkerton, E. E. Firth, H. Bottomley, John Hallam, of Toronto, and Edwin Ive and J. D. Cullingworth of Bradford, England. A tournament was played, at which R. A. Paget won the handicap.

Textile Products on Paper Tubes

By H. D. MARTIN.

The use of paper tubes in the manufacture of textile products is fast developing. Of course the short paper tubes have been in use on mule spinning for years past. Of late years the one-half, three-fourth, and through-tubes on mule spinning, have come very much into use. Each size of tube having a special line of customers. It is not altogether generally known that there is an ever increasing demand for textile products to be sold put up on paper tubes, paper cases, paper shells, and on paper spools of all sizes. As these holders and containers are light, freight rates on shipments are greatly reduced, and as these paper goods are not returnable, there is a big additional saving on freight. While there is a small loss, apparently on the original cost of the goods which are given away with the shipments, this amount is off-set by the reduced usage, also wear and tear of the regular wooden bobbins, spools, and shells.

Another increasing use for paper shells, is the slip-over paper shells used on speeders and all roving machinery for surplus stocks. For example where it is desired to create a surplus of any kind of roving, instead of tying up thousands of bobbins, paper shells are slipped over the set of bobbins being used on the spindles, and the roving is put away on these paper tubes or shell until wanted instead of on the wooden bobbins as was formerly done. Some roving even being sold on these shells. There is another advantage of using paper shells upon which to store roving. When roving is stored on wooden bobbins for any length of time, the oily matter always more or less absorbed into these roving bobbins, works into the layers of roving immediately next to the wood. This stains, discolors and renders a great deal of roving unfit for use, and increases the waste pile.

Of late years there has been much demand for yarns, twines, cords and various lines to be delivered directly put up on paper spools instead of on paper tubes and shells.

Chain yarn has also been delivered on paper shells in an increasing ratio. This has done away with the heavy wooden rolls in the shipments of yarn thus put up also the cost of freight on the return of same.

The very latest development of the use of paper tubes has been for the spinning of filling on the regular ring spinning frames instead of on the mules. For years experiments have been made toward the accomplishment of spinning filling directly upon the bare spindle of the ring frame. This attempt has not been successfully accomplished. But lately a very interesting experiment bids fair to make the spinning of filling directly on paper tubes on the ring filling frame a regular matter of course. This is even better than spinning upon the bare spindle. As the paper tube makes a very good holder or container and prevents stabbing when placed into the shuttle. One yarn mill is already spinning yarn in this way on a large scale and has proven the success of the attempt. This mill spins on a paper tube which measures 13/32 of an inch at the extreme base and which tapers to 9/32 inch at the top. The tube is seven inches long and less than 1/16 of an inch in thickness. Upon this paper tube is successfully spun a cop of yarn 1 1-16 in. in diameter, and six inches long. The size of the ring being 1¼ inch and the yarn

number 30s. This mill is operating very successfully and has done away with bobbin filling entirely. It has lightened the load which the spindles formerly carried by the extra weight of the bobbin. This saves power, oil, also wear and tear. As more yarn can be spun upon this tube than upon the wooden bobbins, the frames are doffed less often. But the big advantage also comes when it comes to replenishing the shuttles, because more yarn is put into the shuttles, and owing to the lesser weight to be carried in the shuttle there is also a saving of shuttles. Cheaper shuttles can now be used, as under this new filling system, no bobbin catches are required in the shuttles. The shuttles are thus lightened by the discarding of both bobbin and bobbin catches thus requiring less power to throw the shuttle across the loom. This also reduces the wear and tear of the shuttles. There is a perceptible increase in the production of the looms, as the loads are not obliged to stop for shuttle replenishing as often as was necessary with the bobbin filling.

There is another big saving as it is no longer necessary to carry the empty bobbin back to the spinning dept. There is no more waiting for bobbins, nor is it necessary to clean bobbins. This new system commends itself to the ever progressive mill man, and bids fair to eliminate bobbin troubles of all kinds also the heavy cost of maintaining a big supply of some on hand at all times. Bobbins soon become warped, unbalanced, nicked, furrowed, cut in slivery, cracked, oily, catches worn out, all of these troubles are entirely eliminated by the use of the smooth, even-balanced, light weight paper tube, and from which the yarn never catches against imperfections as it is pulled off in the process of weaving.

The tubes which are grooved are preferable, as the grooves will keep the yarn from slipping off or of being pulled off by careless operatives. The whole system reduces wastes very materially. The tubes may be sorted out after weaving and re-used when not injured if desired.

The attempt at spinning upon the bare spindle of the ring spinning system, has developed into a much better method than was at first discovered without the use of paper tubes.

Practical Notes on Ring Spinning

By PRACTICAL MANAGERS.

There is an enormous number of ring spindles at work in the cotton spinning world today; in fact, there are more ring spindles than mule spindles producing cotton yarn. It is the purpose of this article to point out some of the everyday practical matters of importance that should be attended to by the spinning room overlooker, foreman, or overseer, and his immediate assistants.

Changing Counts of Yarn.

The changing of the counts or number of yarn on a ring frame necessitates certain alterations in gearing, and may be the travellers and hank roving also. The draft change wheel can be calculated fairly accurately by the ordinary proportion calculation. The coarser the counts or number of the yarn to be produced the larger the draft change wheel required.

In case a very considerable alteration in the counts or number of the yarn is to be made, say, from 20's to 40's, the overseer should consider whether it is advisable to carry out such a change at one frame only or divide the change over two frames. The latter method is both practical and very beneficial in many cases. For instance, a ring frame spinning 20's from 3.75-hank roving may be changed to 30's from the same hank roving. Then, another frame spinning 30's from 5-hank roving could be changed to 40's. This is just an example to illustrate the method. It means making changes at two frames admittedly, but the results are generally better than if one very large alteration in counts is made at one frame.

Cases sometimes arise where the hank roving being used at a frame must be changed without altering the counts of yarn produced. The coarser the hank roving fed the slower it must be taken in by the back rollers; hence, a smaller draft change wheel is required for a coarser hank roving when no change in the counts of yarn to be spun must be made.

Then again, cases arise in practice where the change in counts of yarn to be produced will require an alteration in the hank roving to be used. The draft change wheel can be calculated in such cases by multiplying together the counts of yarn being spun, the draft change wheel in use, and the new hank roving. Divide by the product of the yarn to be spun and the old hank roving.

When a change in the hank roving has to be made, one of the details which the overseer should have attended, is that of stopping the frame when the ring rail is at the top of the lift of full bobbins. Then the old rovings can be broken out and taken out of the creel, followed by arranging the new rovings in the creel and piecing-up the rovings behind the traverse rod. This done, the frame can be started slowly, lowering the ring rails slowly to the bottom of the lift, during which time the piecings will have come through, and the full bobbin can then be doffed.

The calculated draft change wheel is either too small or too large for practical adoption in some cases. The method to adopt if the calculated draft change wheel is too large is to assume a smaller and convenient size of draft change wheel and use a smaller back roller wheel in proportion. For instance, if a calculation results in a 75-draft change wheel and that this gear is too large for convenient use, a 60-draft change wheel could be used on condition that the back roller wheel is also changed smaller in direct proportion. If a 45 back roller wheel was on the frame, this must be reduced in the proportion of 75 to 60, viz., a 36 back roller wheel must be used in conjunction with a 60 draft change wheel. Of course, if the calculated draft change wheel is too small, then the back roller wheel must be increased in size in direct proportion to the increased size of draft change wheel compared with the lesser but inconvenient size of draft change wheel.

The twist change wheel is a very important wheel. A change in this wheel alters the speed of the front roller, and, therefore, the turns per inch in the yarn. This wheel is a direct dominating wheel on the amount of yarn produced. There are two useful rules that may be stated here and applied when the counts of yarn are

to be changed. One rule is to multiply the twist change wheel in use by the square root of the counts of yarn being spun and divide by the square root of the counts to be spun. This rule gives good results when the cotton and hank roving are changed to suit the new counts of yarn to be spun. If the same hank roving and class of cotton are to be used for the new counts of yarn a more useful rule is to find the result by the rule just satted and add it to the result of the ordinary proportion method (that is, multiply the counts being spun by the twist wheel in use, and divide by the counts to be spun) and divide the total by 2. The advantage of this rule will be seen when it is stated that a certain hank roving and class of cotton are found to be very suitable for producing a certain counts of yarn, then, if a change is made to spinning a coarser counts of yarn from the same cotton and hank roving, a slightly larger twist change wheel can be used than that calculated by using the square root method solely. In all cases, of course, the finer the counts of yarn to be spun and the smaller the twist change wheel required.

The builder or ratchet wheel is an important change wheel also, when changing the counts of yarn. The finer the counts to be spun and the larger the builder wheel required. There are at least three rules in everyday use to calculate the builder wheel. One rule is, multiply the builder wheel in use by the counts of yarn to be spun and divide by the counts being spun. Another rule is to use the square roots of the counts. While a third method is to add the results of these two rules and divide the total by 2. A point which should be carefully noted is that any change in the builder wheel does not effect the speed of the ring rail; it only affects the extent which each chase or layer of yarn is wound higher on the bobbin (in case of cop-build or filling-wind). In case of the long-life, warp-wind, or roving-wind build, any change in the builder wheel only affects the amount which each layer or chase is shortened.

Breakage of Yarn During Spinning.

An excessive breakage of yarn during spinning at the ring frame may occur more or less all over the frame, or it may only be an odd spindle or two. In the former case the cause is almost certain to be one of the following: Roving stretched before reaching the ring frame; rollers at the ring frame not set to suit the roving received; too many teeth in the twist change wheel; too few teeth in the draft change wheel; speed of frame too high; travellers too heavy, one or more teeth broken in one of the roller wheels, rovings produced by using excessive drafts at the fly frames, uneven roving caused by mixing cottons too widely different in characteristics; using cotton below the usual quality; traverse motion not properly adjusted; leather covered rollers not maintained in good condition; the various parts of the ring frame not kept clean; creel guide rods not set in the proper position.

In case an odd end of yarn or two persist in breaking down the cause will generally be found in the following:—Slack spindle band; spindle bolster short of oil; thread guide or spindle not set properly; an odd traveller of the wrong counts; roving skewer with a blunt point; waste on the bottom or top of the skewer interfering with its rotation; skewer cups not smooth on the bearing surface; a dirty ring; traveller badly worn; bobbin badly out of balance; traveller set too close; weight hook not acting properly on the roller; top roller short of oil; oil escaping on flutes of bottom steel rollers; an odd bobbin of stretched roving, or containing a long length of "single"; thread guide nicked or rough; bottom fluted rollers scratched by the careless use of steel pickers to remove roller laps; the bosses on double-boss rollers not equal in diameter; bobbin not properly gripping the spindle; cap neb badly worn; waste blocking the hole in the traverse guide.

Yarn Spun Too Soft.

Yarn which is spun too soft is bound to cause trouble at some subsequent stage or other, especially if the yarn is for warp. It is not a little surprising to note the comparative softness of yarn spun on the ring frame in some cases. If the diameter of the full bobbin, no matter whether the warp-wind or the filling-wind is adopted, is not the maximum that the ring will accomodate without interfering with the rotation of the traveller, soft yarn will not break down as often at the ring frame as it otherwise would do when winding on the full diameter of the bobbin. Soft yarn, of itself, is more bulkier and increases the diameter of the full bobbin. The most profific cause of soft yarn being produced at ring frames at occasional spindles is slack spindle bands. It is far better for the frame tender to break the slack band off altogether than allow it to cause soft yarn. Care should be taken by the person tying on spindle bands not to make "granny" knots. Non-slipping reef knots should be made and the tension of all newly tied bands should be as near equal as it is possibe to tie them. When doffing takes place at the ring frame, the person in charge of the set or gang of doffers should see to it that all the empty bobbins are pushed down far enough before re-starting the frame. This can readily be noted by glancing the eye along the tips of the bobbins on each side of the frame. The doffers should also be given to understand that bobbins not pushed down far enough on the spindles denotes carelessness. The bobbin is rotated by the bearing at its upper end gripping the upper part of the spindle say 1 in. or 1¼ in. During everyday wear and usage of bobbins, the bearing tends to become slightly enlarged and thus allow such bobbins to be easily pushed down further on the spindles with the danger of the yarn running over the top of the bobbin, but even this is preferable to soft yarn being produced. Such bobbins should, of course, be discarded as soon as they are discovered. The same applies also to cracked bobbins, as their use is another cause of yarn being spun too soft. The use of bobbins with the upper bearing partly or wholly blocked up with fly or waste (such bobbins being known as "blind bobbins") prevents their being pushed down far enough on the spindle, and while slippage may or may not occur the yarn will be wound on too low on the bobbin. All such bobbins should have the accumulation removed from the bearing by using a fine straight metal picker. The waste which accumulates in the spindle cups should also be removed at intervals sufficiently frequent so as not to prevent the bobbin being pushed down far enough. Other causes of the bobbins not rotating at the required speed are: excessive vibration of spindles, unbalanced bobbins, inner tube of spindle not acting properly, dirty oil in spindle bolsters. Soft yarn can also be caused by insufficient clearness between full diameter of bobbin and traveller, dirty or rough ring, traveller clearer set too close.

Slubs in Yarn.

Slubs in yarn, no matter whether it is intended for warp or filling, is another very undesirable fault. At

the ring frame, slubs cause the yarn to break down oftener than it otherwise would do. At the spooler winding process any slubs in warp as it passes from the ring frame bobbin to the warping spool ought to be caught by the thread guide. In some cases slubs pass through all the processes but are resisted by the reed of the loom and the yarn broken. In some cases, especially in the coarse reeds compared with the counts or number of the warp yarn, slubs even find their way in the cloth, and while they may be removed from the latter by a fine picker there is a fault at that part of the cloth in any case. Slubs may be either of the long or short variety. Short thick slubs can be caused by making careless long piecings when the yarn breaks at the front rollers. If the traverse motion is not set to keep the roving nicely within the length of the bosses of the top rollers, the roving may run over the ends of the bosses of some or even all the top rollers, followed by disastrous results to the quality of the yarn. If waste "fridges" up on the top clearers and drops on the attenuated roving passing between the middle and front pairs of rolls some of the bits of clearer waste will drop onto, and pass forward with, the roving, finally being twisted in along with the yarn. Another and fairly common cause of long slubs in yarn in an excessive overlap when renewing rovings. This operation of renewing rovings with the minimum of slubs has engaged the attention of many practical men at one time and another. Piecings have to be made somewhere, either behind or in front of the three pairs of drawing rolls. The practical fact is, that providing the frame tenders renew rovings behind the traverse guide without an excessive overlap (also being careful not to make wet and dirty piecings) it is the best possible system on the whole. It ought to be remembered by all ring spinning officials that one inch overlap of roving will cause a length of, say, 8 in. of slub or thick yarn if the frame has a draft of 8. Some frame tenders are so adept at making piecings when renewing rovings that the yarn spun from the piecings is not easily distinguished from the remainder; this, the tender accomplishes by having a full roving bobbin in one hand with the end prepared, and when there is only a few feet of roving on the nearly empty bobbin, uncoil a little therefrom by the other hand and break it off close to the bobbin. Now simply press the end from the old bobbin on to the end from the full bobbin and just to overlap only. Before placing the full roving bobbin in the creel, allow the piecing to enter between the back pair of rolls. This may seem a rather extremely careful manner of making roving piecings, but it is not a little surprising how quickly it can be accomplished with practice. When any parts of the frame are being brushed down, care should especially be taken that none of the fly, or as little of it as possible, becomes incorporated with the yarn. Some frame tenders seem to be quite innocent as to the consequence of "wafting," blowing, or brushing fly from such parts as the creel, creel guide rods, roll stands, thread lappets, and ring rails, etc. It is far preferable for a frame tender to remove and collect the fly, waste, etc., from such parts as those named without causing it to float about in the air and drop on other parts of the frame, on the yarn, on the roving, etc. Other causes of slubs are: slubs in the roving, accumulations of waste from the traverse guide holes occasionally passing forward with the roving, and the frame tender piecing ends up at the front and the yarn catching on to a portion of the waste held in her hand.

The Art of Winding

By GEORGE W. FOSTER of the Universal Winding Company.

(Concluded from Page 606).

As you are aware, warp yarns formerly were, and now are, prepared in long lengths for weaving, by first spooling, then warping, and finally slashing, thereby presenting to the loom thousands of yards of thoroughly inspected material, representing one of the two elements referred to. The other element represented by the filling has only recently been given the same careful preparatory treatment accorded to the warp, it being the practice in the past to perpetrate the error avoided in the warp by injecting into the filling process two or three hundred grains only of uninspected material, which by the law of average and proportion is negative to the warp element with which it is to be mated.

To offset as far as possible this unequal condition and inconsistent practice, a positive-driven type of winding machine was developed to wind filling with compact precision from mule cops or frame bobbins on to a paper or wooden container holding two or three times the amount of yarn usually presented to the loom, the process of winding improving the filling, even as the preparatory processes improve the warp, with the result that both material elements are presented to the loom in maximum lengths of equal completeness.

In order that you may fully appreciate just how this treatment of the filling affects the machine and human factors in the weaving process, and its ultimate effect on the two outstanding economic problems previously referred to, let us compare past practices with present methods.

In past mill practice the amount of yarn contained on a mule cop or frame bobbin seldom exceeds 350 grains, and if the mill were weaving 40-inch sheeting, 80 x 80 square, 30s warp, 40s filling, the loom running at 160 picks per minute, the amount of 40s single filling consumed per loom per week would equal fourteen pounds.

Under these conditions, a weaver would be given eight plain looms to run, the total job consuming 112 pounds, or 704,000 grains of filling every forty-eight hours. Dividing the total grains consumed by the grains contained on the cop or bobbin, proves that the eight looms must stop 2240 times weekly for filling changes, and that the weaver must charge and change shuttles an equal number of times, providing the yarn on every cop or bobbin runs its entire length without breaking; as a matter of fact, the total number of interferences would equal 2400 instead of 2240, due to imperfections in the yarn, sluffing from the containers, and the amount of material usually left on the cop or bobbin butt.

By direct comparison, this mill, winding and preparing its 40s single filling, would present to the loom a bobbin containing 875 grains, or 4200 yards, of inspected material, with a result that the eight looms would only stop 896 times instead of 2400, the weaver charging and changing shuttles 896 times against 2400 in forty-eight hours, there being no additional interference through imperfections, sluffing, etc. The difference in loom stoppages between the two methods

equals 1.04 interruptions weekly, amounting to a considerable saving in machine and hand time.

Ordinarily, seven or eight seconds is ample time to charge and change a shuttle with bobbin filling, and fourteen to sixteen seconds the time to charge and change cop filling; however, this does not hold true if the weaver is occupied mending warp, and it is quite possible for looms to be stopped minutes instead of seconds if the weaver is not in a position to make the filling replacement. In this connection, it must be borne in mind that 875 grains of inspected filling will run twenty-two consecutive minutes in a loom weaving 40-inch goods at 160 picks per minute; consequently, when a weaver is mending warp the balance of the job is more likely to be running.

If 1504 represents the actual reduction in the filling changes, and eight to sixteen seconds the time lost per change, figures prove that three hours out of forty-eight hours would be saved, as compared with frame spun filling, and six hours as compared with cop filling. While this saving fairly represents the additional time allotment for operatives, it does not represent the complete saving in machine time. For illustration, saving three to si xhours of the operative's time, plus the greater continuity of loom motion, represents the improvement for estimating increased loom efficiency.

In actual mill practice this saving in machine and operative time results in an increased loom efficiency of ten to twenty per cent, as compared with frame or mule spun filling, which is equivalent to adding that percentage of looms to a mill equipment without initial cost or yearly operating expense.

With long lengths of prepared filling loom jobs are increased from fifty to a hundred percent, depending on the style of goods being woven. On the 80 x 80 style sheeting previously referred to, a weaver running twelve looms would only charge and change shuttles 1344 times weekly, as against 2400 times on eight looms with a 350-grain spun supply.

Under this improved condition, a weaver running twelve looms would only charge and change thirty-six shuttles per hour, less than ten per cent of the sixty minutes being occupied in this respect. Furthermore, it has been definitely determined that the higher loom efficiency previously accounted for is not lost when the job is increased in reasonable proportion to the saving in hand time. Increasing a loom job fifty per cent naturally increases operative productivity in like proportion, plus the higher efficiency of each loom, figures and facts proving that the physical burden, or hand time, on the twelve-loom job is considerably less than the burden or time on the eight-loom job, where continuous filling changes are constantly interrupting both machine and operative.

In the foregoing I have described the effect of a preparatory process on the machine and operative factors in the weaving process, and it now remains to show how prepared filling improves quality and saves waste in materials.

As far as improvement in quality is concerned it is obvious that the fundamental principle in cloth construction calls for the greatest continuity of loom motion that it is possible to establish. Mispicks, thick and thin places, loops and cracks in the selvedge are the results of filling changes which interrupt the harmony of loom motion, and it follows that any method effecting a sixty per cent reduction in these changes must operate for refinement and quality. Furthermore, slubs, bunches, soft and thin places in yarn are likely to be woven into the cloth unless removed in a preparatory process.

Filling waste made in weaving is the source of enormous losses in the textile industry, amounting to millions of dollars annually. I venture to say that when mule cop filling is used eight ounces of waste represents the loss per loom per week, and when frame bobbin filling is used four ounces per loom per week would be a conservative estimate.

Few men like to admit their losses in this respect, and I find it difficult to convince them that this waste represents a loss considerably in excess of cost value.

I would like to cite a condition that came under my observation during the latter part of the war, when 100s single yarn was selling for four dollars per pound. A mill weaving average 100s single filling on mule cop was making, according to their waste account, seven ounces of cop waste per loom per week, and as they operated four thousand looms, the total loss amounted to 87,500 pounds per year. If the cost value of 100s single yarn equalled $2.50 per pound, and the value in cloth equalled $4.20 per pound, this mill lost $218,750.00, plus a possible profit of $148,750.00, totalling $367,500.00; deducting the amount of $10,500.00 received for waste, the net loss, as I prefer to figure it, equalled $357,000.00 per year. (Evidently Andrew Carnegie had the right idea).

In direct connection, it is fair to assume that 87,500 pounds of waste cannot be collected and salvaged without considerable expense.

Similar losses, by degree, appear in all weaving processes, and are caused by constant filling changes brought about through short lengths of imperfect and impaired material being injected into the process, and I think you will agree that this fairly represents an economic loss.

When filling yarns are wound and prepared for weaving, one-half of one per cent waste is made in the winding process, but no waste whatsoever is made at the loom; consequently valuable materials are woven into cloth for a greater turn-over.

When filling yarns are spun for a winding instead of a weaving process, it is usually the practice to spin a greater amount of material on the cop or bobbin by either changing the builder motion on the mule, or by changing the size of the ring on the frame. Taking the 40s single filling previously referred to, as an example, past practice would spin this count on a 1⅜ inch ring, each bobbin containing 350 grains of material.

The present method would be to spin this number on a 1⅝ inch ring, each bobbin containing 875 grains, or an amount equal to the quantity wound for the shuttle. This equal condition would establish a simple transfer process at the winder, cheapening the cost of that operation. It would also effect a two per cent increase in spinning efficiency, due to the reduction in doffing changes, and it follows that bobbin equipment and bobbin transfer charges would be reduced all along the line by the lesser number of containers involved.

As I see it, the ideal combination for spinning 30s single warp and 40s single filling for 80 x 80 square cloth, would be to equip all spinning frames with 1⅝ inch rings, warp bobbins and filling wind throughout. This would insure great flexibility of spinning equipment, and as I understand, the application of filling wind builders to warp frames would insure a five per

cent increase in spinning production, as compared with past practice.

Under this arrangement bobbins containing approximately 875 grains of warp yarn would be delivered to the spooler, there to be inspected, pieced in long lengths and wound for the warping process. (Incidentally, production at the spooler would be increased at least twenty-five per cent by the overend delivery from filling wind warp bobbins).

At the same time, bobbins containing 875 grains of filling yarn would be delivered to the filling winder, there to be inspected, pieced in long lengths and compactly wound for the shuttle. Under these conditions and only so, can warp and filling yarns be truly mated in a weaving process.

While I have so far applied the principle of preparation to plain loom weaving, I do not wish you to infer that the proposition has less value for looms where the filling is automatically supplied.

Applying a similar treatment to the filling process in automatic weaving, it is interesting to estimate that a weaver running sixteen looms with a 350-grain spun supply, must magazine weekly 4800 containers, the automatic features being obliged to function an equal number of times in the transfer of these bobbins from magazine to shuttle. By direct comparison, with 875 grains of wound inspected filling on a bobbin, a weaver would only magazine 1800 containers per week on the sixteen-loom job.

It is interesting to estimate that if 875 grains of 40s single filling runs twenty-two consecutive minutes in a loom, a magazine of twenty-four bobbins would constitute a day's supply. It is obvious that the amount of "feeler" waste made in a week would be reduced in proportion to the difference in bobbin changes; consequently, the expense of reclaiming the waste from the bobbins would be lessened in like degree.

Bobbin equipment and bobbin replacement expense would be greatly reduced when one bobbin contains 875 instead of 350 grains.

I do not contend that rewound filling would effect any appreciable increase in automatic loom efficiency, as compared with frame spun filling; there would, however, be a considerable saving in the hand time, which could be utilized for increasing operative productively.

As compared with mule spun filling, I contend that a preparatory process for automatic loom weaving will effect all the advantages heretofore outlined in my plain loom analysis. Fixing charges and repair expenses on looms, either plain or automatic, are bound to be lowered through a sixty per cent reduction in shuttle or bobbin changes.

A recent application of the preparatory process to worsted weaving brought out some very interesting facts. High grade worsted serges are usually woven on 3 and 1 box looms, it being the practice to constantly mix the filling by changing the shuttle every other pick, in order to prevent a wavy appearance in the fabric, due to slight variations in the filling yarns. Until recently the practice has been to place in each of the three shuttles a spun bobbin containing approximately 400 grains of filling, totalling 1200 grains in the three shuttles. As the looms were wide and the filling rather coarse, interruptions for filling changes were numerous; consequently, a weaver could only run two looms, while the efficiency of the looms seldom exceeded eighty per cent.

When this proposition was taken hold of, it was found that the same shuttles would easily accommodate a wound bobbin containing 1200 instead of 400 grains of filling (providing this amount of material was compactly wound); consequently, each loom is supplied with 3600 grains, over one-half pound of filling yarn in one charging operation, with the result that a weaver now operates six looms instead of two at an efficiency of ninety-five per cent instead of eighty per cent. The whole situation is pregnant with interesting details.

I have not submitted any figures as regards the cost of filling preparation; neither have I reduced to dollars and cents any of the enumerated savings. I considered doing so, but in view of the fact that many mills have adopted the preparatory process I have outlined, and the fact that the method calls for so many re-adjustments all along the line, I questioned the advisability of including in this paper any values of a definite nature.

I will say this, however, that the cost of filling preparation, like the cost of warp preparation, is more than absorbed by the economies superinduced through its use.

In conclusion, I wish to emphasize this fact — that serious competitive conditions will have to be met from many quarters, unless the restrictive rules of working, which necessarily limit output, are neutralized by the adoption of such legitimate aid as may be secured in producing quality and volume.

CLOAK AND SUIT WORKERS STRIKE.

Protest in Montreal Against Piece Work.

Nearly 1,200 cloak and suit workers in Montreal are out on strike following an unanimous vote cast in favor of a strike at a mass meeting.

The strike has been called by the Cloak and Suit Workers Union, Locals 13, 19, and 61 of the International Ladies' Garment Workers Union, as a protest, the union states, against the attempt of the manufacturers to reintroduce piece work, establish longer hours and reduce wages. The object of the strike is stated to be to maintain present conditions.

Over 98 per cent of the entire trade had responded to the call for a walkout, union officials claimed, and in addition, they alleged, many workers who were not union members had come out also.

The Montreal Cloak and Suit Manufacturers' Association responded to the lightning general strike by declaring open shop. Many of the large houses had previously reverted to open shop conditions, but the strike, of which the manufacturers had no notification, has caused an all-round decision that no further dealings with the unions will be considered.

"We will have nothing whatever to do with the unions in any shape or form," is the sentiment of the manufacturers.

Mr. R. A. Paget, of E. T. Carter & Co., Limited, Toronto, recently visited the Maritime Provinces in the interests of his Company. He believes business conditions are showing a material improvement.

The Ontario Hosiery Co. have started in the manufacture of half hose, at 73 Adelaide St., Toronto. They have installed a complete range of Harley-Kay machinery.

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Standardization in Textiles

By F. R. McGOWAN,* Washington, D.C.

About two decades ago, Congress passed a bill, authorizing the establishment of an institution for developing and maintaining standards. At that time the attention was devoted to the establishment of standard weights and measures, while to-day the number of sections has increased to 68, one of which is devoted to the manufacturing and testing standards of textiles. In the textile section, we have installed a complete cotton mill, which consists of full size machinery up to and including weaving.

We have a large chemical and a large physical testing laboratory and also have for the past five years conducted researches on the microscopic examination of textile fibers and fabrics. At the International Textile Exposition, we have been given space in which is shown photographs of our equipments and charts for our test methods, etc.

Little Textile Standardization.

Unlike most industries very little has been done in standardization in the textile industries, though it has been thought of. Now is the time for such an association as this to start the work on standardization. It could be done by an association at a much lower cost than could be possible from individual effort. The textile manufacturer should take immediate steps to offset the belief which the users of textiles, especially in the mechanical lines, have that this work should be done. As a matter of fact, they are trying to write up their own standards. This statement is based on inquiries received in the Textile Section of the Bureau of Standards. Hardly a day passes that we do not receive letters from such firms as the General Electric Co., Ford Motor Co., Maxwell Motor Co., Edison Electric Illuminating Co., etc., asking for information in regard to establishing laboratories which would assist them in drawing up specifications for materials. If the textile industry does not get busy and assist these institutions in drawing up specifications, the result will be that we shall have a large number of specifications in existence which may make it harder for the manufacturer to produce fabrics or commodities which conform to the specifications.

Four Standardization Headings.

Standardization can be thought of under four types —standardization of quality, measurements, performance, of a variety of constants. The manufacturer is interested chiefly in standards of measurement and of quality. He should be interested in the standardization of quality and performance to bring about the satisfaction of the consumer. He cannot hope to comply with the various requirements without standardization of quality and performance. This would place matters on an entirely different basis in dealing with the public. The public should be shown how to purchase when in need of a certain fabric for a particular use, when to purchase one fabric and when another, and how to use textile materials. It is the object of the Bureau of Standards to bring the manufacturers and the public together and to help the public to understand how to use the materials of the manufacturer. We do everything we can for both, in development and improvement of these standards.

Co-operation Necessary.

During the war the Government through the co-operation of manufacturers and the Bureau of Standards was able to substitute cotton for linen for airplane wing covering. As you all know, the supply of linen was cut off and it was absolutely necessary to have a substitute. From the requirements of the aeronautical designer and investigator, we were able to ascertain what the surface pressure on a wing must be. We knew that we must have a fabric which would not deflect and vibrate excessively and cut down the necessary speed and power; that we must have a fabric which would remain taut for a considerable period of time and give a smooth surface which would cut down the wind resistance. This is an example of the development of a specification and a fabric through the co-operation of the manufacturer and the laboratory. This accomplishment, performed in a remarkably short time, is my best illustration of what can be accomplished when the manufacturer and the user come together and should serve as an incentive for further work and further research.

At the Bureau it is our policy in making up specifications to bring the manufacturers and users together and find out what it is possible to do, considering at the same time the requirements and the possibilities of manufacture. We found that this is the only way to make the specifications.

To Standardize Duck.

At the present time we are attempting to standardize numbered ducks for Government use. We have called in the Cotton Duck Association and all the purchasing agents of the Government departments, as we find that the Government in its various activities uses practically all textiles. We find that in the past the specifications for these numbered ducks have made it necessary for the manufacturer to look upon them as special and not commercial ducks. One of the chief objects in writing these specifications is to produce a duck which can be obtained from stock resulting in lower cost and quicker delivery. The co-operation given by the Cotton Duck Association can be looked upon as voluntary co-operation and the standardization of this material can be looked upon as voluntary standardization.

We have to be able to fix all Government standards so that they will be satisfactory to the manufacturer; so that they will require the least amount of inspection and at the same time reduce to a minimum the number of specifications applied to material.

Bureau of Standard Tests.

At the Bureau we have started an investigation to determine a simple factor calling the investigation for the time being the relation of the per cent of crimp in the warp and filling yarns to the physical properties and performance of the fabric. The investigation itself appears to be very short and without use in the utilization of textiles. We manufactured a large number of fabrics in which we made measurements on the different variables in the fabric and are now comparing them with the variables in crimp. We find in

* Paper read at the Convention of National Association of Cotton Manufacturers held at Boston.

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certain tests definite reasons why a cord fabric should last longer than a fabric tire. We find that some of the theories and practice of the present day in regard to certain properties of a single yarn as against a two ply yarn are misleading and in some cases incorrect. Comparing a 10's single soft and hard twisted and a 2 ply 20's soft and hard twisted, we find from our tear test, using four yarns of similar count, that the 10 ply hard twisted gives a greater tear resistance for the same construction and conditions than is usually expected in two ply yarns. Using the same yarns and the same construction with a large amount of crimp and a small amount of crimp, the incipient failure test of 95 per cent of the breaking load shows tentatively that a fabric with the small amount of crimp gives greater serviceability than a fabric with the large amount of crimp. This fact is now being considered in the development of balloon fabrics. We find in balloon fabrics that we have an unbalanced proportion of crimp in the warp and filling. We find that requirements of balloon fabrics are that both sets of threads should carry an equal load in order that the weight of the ballon covering may be reduced. In actual service the present fabrics, as in most unbalanced fabrics, have one set of threads doing most of the work and in some cases all of the work; and the fabric is only as strong as that direction in which the lesser amount of crimp can be found, considering that the yarns in warp and filling are equal. This is an instance where scientific research will result in a large improvement and saving, although in the beginning of the experiment we did not know just what we were striving for or that we were going to deal with such a fabric as balloon fabric.

Classification of Textiles.

Another phase of standardization to be brought out is the classification of textile materials. There are a few classifications in the textile industry, but they are not binding and were put out for the use and convenience of the organization compiling them and could not be applied to the industry as a whole. The textile industry has a wonderful opportunity to start a systematic and trustworthy classification which would have very little resistance in its establishment. In this classification of textiles it is desirable to consider the methods of manufacture of textiles and the uses to which they are to be put. It should be carried on for all fabrics, not only cotton, but woollen, silk, linen, etc. It should be compiled so that the uses and properties would afford means for interchanging from one fiber content to another in the event of exhaustion of one fiber or certain discoveries in regard to another which would permit increased production.

Then would come what is sometimes called "simplification." It means the confinement of manufactured articles to the smallest number of sizes and varieties. In some materials we need variety and a number of sizes, but we should strive for that variety which is consistent with public needs. There are some varieties and sizes not found which would be more useful than the present varieties. We must investigate to find just what the varieties and sizes are which will suit the other industries best; the building industries, the mechanical goods industries, etc. The Textile Section is much interested in simplification and Congress has recently given us the money to carry out the work and we believe we may be of greater assistance in the development work.

Tests for Standardization.

Going into the laboratory phase of standardization, we cannot hope to obtain a definition or a specification which will amount to anything if we have not the proper test methods. Here we must bring in considerable research as to just what is the proper method. After that we can proceed to make the necessary tests, the results of which will be embodied in specifications. Along the lines of establishing the proper tests there has been an instance where at the request of a consumer who was using a fabric in connection with foodstuffs the Bureau was called upon to determine certain standards. In this case it was in the purchase of press cloths used in pressing the oil from cotton seed. For this it is necessary to use a heavy fabric usually made from camel's hair, human hair, mohair, etc. The question involved was as to the moisture and oil content which the cloth should contain—what would be a fair percentage. As in the silk and wool trades, the purchasers of press cloths, if they do not note these facts, are likely to be buying moisture and oil instead of fibre content of the fabric being purchased. The Bureau made inquiries and found that there were several methods used in determining the oil content of press cloths. A short investigation showed that in extracting the oil some manufacturers used a crude ether compound, others a soap and warm water bath which took out a large amount of oil, but, as was admitted, did not take out the oil contained in the individual fibre. The method used by the Bureau, which is not new and has been used to some extent, was the extraction of all possible oil in the fibre. All these various methods showed the necessity for standard laboratory work and research standards before moisture content and oil content could be established.

In all specifications one of the important factors is that of tolerances. We find to-day that we have specifications in which no tolerances exist, no tolerances within which an inspector or purchaser can be assured the material will fall. If he is purchasing duck 40 inches wide, when should he reject it? Should it be 40½ or 41 inches? What would be a fair average to both the consumer and the manufacturer? We know that textiles are greatly affected by atmospheric conditions and manufacturing treatments. Research could establish these tolerances and justify them, and they could then be inserted in specifications. We have not only the tolerance in the materials themselves, but we have the tolerance due to error in test methods.

Functions of Standardization.

The chief functions of standardization are the elimination of waste in production, materials and trading; a decrease in unit cost; an increase in the practice of shipping directly from storage; an increase in justice and fair dealing; a tendency to eliminate methods and practices established by tradition; an increase in the utilization of fundamental scientific research; a decrease in the volume and variety of raw materials; and the expansion of foreign trade.

Gentlemen, I have attempted in a very crude way to bring out some of the existing facts on the need for and methods of obtaining standardization. We have put the matter up to you so that you will be in a position to understand us when we call upon the industries to assist us in performing a national duty, and it is hoped that the response will be satisfactory.

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The Dyeing of Textiles

By HERBERT A. CARTER, Manchester, England.

(*Continued from Page 578.*)

In dyeing operations in order to produce colors fast to washing, soaping, and rubbing there must be produced on the fibre an insoluble coloured substance. Now as the direct dyes do not essentially produce such insoluble bodies when dyed on the cotton the colours they form are not always fast to washing and soaping. It has been ascertained, however, that some of the direct dyes e.g. Benzo azurine, Chicago blue, Catechu browns, Diamine blues, Diamine browns, etc., have the power of uniting with metallic bodies to form insoluble colour lakes, and this combination can take place on the fibre. Fast shades may be dyed with the dye stuffs named above, and with others of this group by first dyeing them in the usual way, then passing through a boiling bath containing bichromate of potash, or copper sulphate either together, or separately. The two fixing agents named here have been found to be the best although others as, for example, zinc sulphate chromium fluoride, and iron sulphate have been tried. In the case of some dyes there is little, or no alteration in shade but in others there is some change, thus the blues, as a rule, tend to become greener in tone, and browns also are apt to assume a greener tone, and a deeper shade. The treated shades so got are distinguished for great fastness to washing, soaping, and light, and it is to be noted that bichromate of potash has both a fixing, and an oxidising action on dyestuffs, so it is necessary to use it with a certain amount of caution, and not in too great a quantity, otherwise with some dyes there is a danger of over oxidation, and as a result poor shades will be developed.

For developing, quite a large number of substances are employed. Some of these are regular articles of commerce, others are the special productions of certain firms who advise their use with the dyes that they also manufacture.

The end sought in dyeing is to secure uniform, and complete coloration of the entire material of the fabric. The efforts of the calico printer are directed to applying the colouring matters only in certain parts, and in a well defined pattern, so printing may be looked upon as local dyeing. Closely allied, however, as these two branches of the subject may be it follows from the nature of the case that the ways, and means whereby their respective objects are secured must be very different. In dyeing, for instance, it is for the most part possible to modify a dyed colour by the subsequent application of other dyes but in printing this is not possible, and therefore all the material employed must be carefully examined before use.

Of late years machine dyeing has been greatly extended, and there are now a large number of patented appliances for accomplishing the work. Cotton is now dyed by machinery in the condition of "flock", or waste, also as sliver, slubbing, and rove, hanks, beamed warps, and to a very large extent as cops, and yarn. Wool is dyed loose (for woollen yarn) as sliver (for worsted yarn) cops, quick traverse bobbins, and most of all, as yarn. The machines may be open, or closed types. The circulation of the dye liquor is obtained by pumps, gas pressure or suction, steam pressure, vacuum, and centrifugal force. Vacuum and steam pressure are employed with sulphur, and vat dyes from which it is desired that air should be excluded.

With respect to the agents employed in dyeing operations it may be said that a base is a metal, or combination of a metal with oxygen, an acid is a non metal, or a combination of a non metal with oxygen, or hydrogen, a salt, or neutral substance is formed when a basic, or positive substance combines with a negative, or acid substance. Thus the neutral substance Glaubers salt, or sulphate of soda Na_2OSO_3 is made up of the positive, or basic substance soda Na_2O, and the negative, or acid substance sulphuric anhydride SO_3.

Alum was one of the first substances used as a mordant for fixing colouring matters but it is only its base alumina which is useful for this purpose, this base combines with the acid colouring matters to form insoluble salts. Alum is a rather expensive source of alumina seeing that it only contains about 11 per cent of that base. The pure alumina itself cannot be used as a mordant because it is not soluble in water, for in order to get a substance to combine with cotton we must first make a solution of it in order that it may enter the pores of the fibres, the substance must then be rendered insoluble so that it cannot get out of the fibre again. However, alum and sulphate of alumina are not the best substances to employ for cotton when it is desired to apply alumina to this fibre the acetate of alumina is a far better substance to use for this purpose, especially, if we wish to print a pattern in alumina mordant which is to be afterwards dyed up with one of the acid colouring matters. The acetate of alumina or "red liquor", as it is very frequently called, is very largely employed by dyers, and calico printers. Ferrous acetate, or "black liquor", as it is often styled, is a similar compound to red liquor, and it is used in the same manner, and for the same purpose, that is, as a mordant for the acid colouring matters. These two mordants are extensively used by calico printers for what is called the dyed, or madder style

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which is one of the oldest, and most important styles in calico printing. In this style the thickened mordants are first printed on, then dried, aged, dunged, and dyed with alizarine, or other acid colouring matters. The mordants have first to be made into what are technically called "colours" before they can be printed, that is, they have to be made into a kind of paste by means of some thickening matter such as starch, gum, etc. These latter agents are always spoken of as thickeners, and these colours are not necessarily coloured matters though they usually contain some colouring matter but this is only for the purpose of sightening so that the printer may be able to see his work on the cloth, this sightening is washed out of the cloth after it is printed during the process of dunging.

It is not always necessary to boil colours of the exact strength required for printing, it is found more convenient to make a strong colour which is referred to as a standard, or stand, and this standard is then reduced with paste to the needed strength. A strong colour thus reduced is said to be made so many dark, or so many light, written Dk, and Lt, thus we could make No. 1 colour from No. 2 colour by taking two measures of No. 2 colour, and one measure of starch paste, the No. 2 colour in this case would be considered the "stand", and the starch paste the "reduction". The stand in this case is said to have been made 2 Dk, i.e., 2 parts of the Dk, or strong colour, and 1 part of reduction.

The Dunging or Fixing process consists simply in passing the cloth in a continuous manner through the dunging apparatus, or cisterns containing the dunging liquors. This operation is carried out after the cloth having been printed is dried, and the material has passed through the ageing process, the object of which is to decompose the acetates so that the acetic acid is driven off, leaving the insoluble bases on the fibre. The ageing does not effect a complete precipitation of a suitable mordant on the fibre, and this is why the dunging, or fixing process is called into requisition.

Dyeing for the madder style is generally done in the spiral dye beck, the cloth being in a rope is drawn by a winch or else by draw bowls in an endless manner through the beck, peg rails are used to keep the cloth in its proper place. The colouring matter to be used in the dyeing will depend upon the shade required, and the amount of colouring matter to be employed will depend upon the kind of matter printed, some patterns require ten times more colouring matter than others, then, again, in the madder style the pattern has not only to be dyed up but the white parts must be kept as clean as possible, and for this purpose other materials besides colouring matters are added to the dye-beck.

In what is termed Froth-dyeing the apparatus used is quite the simplest form of dyeing apparatus, and this method is resorted to chiefly in such cases where the requirements for levelness of shade are not very exacting, it is applied chiefly for the dyeing of cheeses, and the material is dyed in the froth produced by intense boiling. The apparatus used consists, for instance, of a square wooden box about 5½ to 6 feet high, and 3 to 3½ feet wide, fitted with a strong steam pipe about 2" in diameter, and of a total length of 25 to 36 feet. This steam pipe passes down one side of the box, being coiled on the bottom. The contrivance consists of an outer box containing the liquor, and a cage for holding the cheeses which is lowered into the dye box by means of a crane. The cage is provided with short wooden legs to prevent the bottom layer of the cheeses from coming into contact with the boiling liquor.

(*To be Concluded.*)

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If any industry had reason to believe trademarking of no value to them because "their business is different", it was the California Fruit Growers Association.

Unlike most manufacturers, their product is uncertain. It depends upon the weather. A simple cold spell can destroy a large part of the crop.

Yet over fifteen years ago, within this association was born the trademark "Sunkist." It has been used with phenomenal success ever since. An official of this association is quoted as having valued it at $10,000,000.00!

An opportunity for you

Textile manufacturers have even a greater opportunity in trademarking their goods. For textiles are standardized. They are not dependent on whims of the weather.

You may want a trademark, yet not know how to design it. You may not know how to use it — how to apply it on your goods. You may be skeptical as to cost of application.

Kaumagraph service includes assistance in the design of a suitable trademark. Kaumagraph Dry Trademark Transfers provide the practical, economical and efficient method of applying the trademark to the goods. We will welcome an opportunity for consultation with progressive textile, silk, hosiery and underwear manufacturers.

Kaumagraph Company

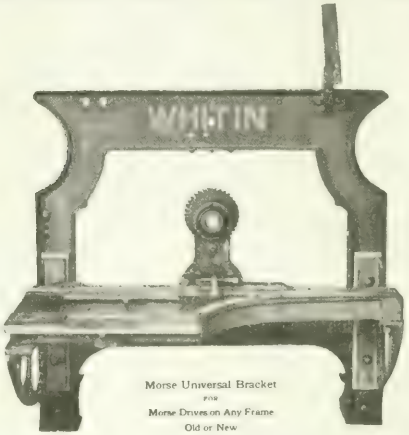
Sole Manufacturers
209 West 38th St., New York.
Branches at Boston, Chicago, Philadelphia and Hamilton, Ont.

Kaumagraph
Dry Trademark Transfers

MORSE UNIVERSAL BRACKET.

This bracket was developed with an idea of having something which could be used for the Morse Silent Chains on any make of Frame, either old or new. It is furnished so that it can be installed either on the foot end or the head end.

Four pieces are usually furnished, the two brackets



Morse Universal Bracket
FOR
Morse Drives on Any Frame
Old or New

which bolt on the legs of the Samson, the piece which bolts on these brackets and a support for the outboard bearing for cylinder shaft.

These brackets have been used very successfully on several large installations of Morse Silent Chains on old frames in Cotton Mills in U.S.A.

Jones & Glasseo Reg'd., St. Nicholas Building, Montreal, are the Canadian Agents.

A statement issued by the Canadian Connecticut Cotton Co., of the company's standing as at September 10 and covering a two-year period, shows profits amounting to $526,632, which, with surplus at organization, gives a balance of $1,737,753. Out of this dividends amounting to $566,834 were paid, leaving a balance of $1,170,919 carried into surplus account.

The balance sheet shows total assets amounting to $7,491,334. Cash on hand is given at $424,456. War loan bonds $100,000. Receivable $698,575. Inventories $483,764, against which are held valid sales contracts in amount sufficient to absorb them.

Mr. Edwin Ive, the well-known wool dealer, of Bradford, England, sailed for England last week, after several weeks spent in visiting various Canadian centres, with his Canadian representative, H. Bottomley, of Toronto.

Mr. Leslie Biggin, manager of the Canadian Wool Company, Limited, of Toronto, returned last week from a busines trip to Nova Scotia and New Brunswick. Mr. Higgins reports a marked revival in the textile industry in Eastern Canada.

Mr. J. D. Collingworth, of the firm of Henry Collingworth & Sons of Bradford, England, is at present visiting his Canadian connections, adn is touring the mills, accompanied by his Canadian Manager, Mr. E. E. Firth.

INDEX TO MILL SUPPLIES

Acid-Resisting Paint:
McArthur, Irwin, Limited
Dominion Paint Works Ltd.
Canadian Johns-Manville Co., Ltd.
Albone:
The Roessler & Hasslacher Co
Aniline Oil:
British Dyestuff Corporation Huddersfield Ltd.
A. Klipstein & Co., Ltd
McArthur, Irwin, Limited
Aniline Dyes:
Atteaux Dyestuffs & Chemicals Co., Limited
British Dyestuff Corporation Huddersfield Ltd.
L. B. Holliday & Co., Ltd.
A. Klipstein & Co
Geigy Company, Inc.
Pollack Brothers & Co
McArthur, Irwin, Limited
Sharpe C. A. Ltd.
T. D. Wardlaw & Son
Automatic Feeds for Cotton and Wool:
Jefferson, Edward.
Leigh & Butler.
Saco-Lowell Shops.
Sargent's C. G. Sons Corp.
Automobile Gears:
Diamond State Fibre Co., Canada, Ltd.
Bagging Machines:
Sargent's C. G. Sons Corp
Baling Presses:
Bredannaz, Louis & Son.
Barrels:
Diamond State Fibre Company.
Baskets:
Diamond State Fibre Company.
Beamers:
Crompton & Knowles, Loom Works
Saco-Lowell Shops.
Belting:
McLaren, The J. C., Belting Co., Ltd
Belt Dressing:
McLaren, The J. C., Belting Co., Ltd
Bleaching Powder:
Atteaux Dyestuffs & Chemicals Co., Limited
McArthur, Irwin, Limited
Can. Salt Co., Windsor, Ont.
Nichols Chemical Company
Bleaching Materials:
Atteaux Dyestuffs & Chemicals Co., Limited
A. Klipstein & Co., Ltd
McArthur, Irwin, **Limited.**
The Roessler & Hasslacher Co.
Nichols Chemical Co., Limited
Sharpe C. A. Ltd.
Boards:
Diamond State Fibre Company.
Bobbins, Spools, Shuttles, Etc.:
Canada Spool and Bobbin Co
Jefferson, Edward.
Leigh & Butler.
Watson, L. S., Mfg., Co.
Boxes—Fibre:
Diamond State Fibre Co., Canada, Ltd
Boiler Graphite:
Dominion Paint Works Ltd.
Boiler Feed Water Purifiers:
Scaife, Wm. B., & Sons Co.
Brick Paint:
McArthur, Irwin, Limited
Sharpe C. A. Ltd.
Brushes, Steam:
David Gessner.
Jefferson, Edward
Burr Pickers:
Jefferson, Edward.
Leigh & Butler.
Sargent's, C. G., & Sons.
Cans:
Diamond State Fibre Company
Canvas Waterproofing Paint:
Dominion Paint Works, Ltd.
Carbonizing Machinery:
East Jersey Pipe Corporation.
Jefferson, Edward.
Sargent's, C. G., & Sons.
Tolhurst Machine Works.
Card Clothing:
Bredannaz, Louis & Sons.
Crabb, Wm. & Co.
Leigh & Butler.
T. D. Wardlaw & Son
Watson, L. S. & Co.
Card Grinding Machinery:
Leigh & Butler.
Roy, B. S & Son Company.
Saco-Lowell Shops.
Carding Machinery:
Jefferson, Edward.
Leigh & Butler.
Saco-Lowell Shops
Card Clothing Strickles:
David Gessner.
Cards:
Saco-Lowell Shops.
Jefferson, Edward.
Leigh & Butler.
Carpet Machinery:
Crompton & Knowles Loom Works
Saco-Lowell Shops.
Caustic Soda:
Canadian Salt, Co.
Atteaux Dyestuffs & Chemicals Co., Limited
McArthur, Irwin, Limited
Nichols Chemical Company
Centrifugal Dryers:
Imperial Trading Co
Watson, Laidlaw Co.
Tolhurst Machine Works.
Chemicals:
Atteaux Dyestuffs & Chemicals Co., Limited
British Dyestuff Corporation Huddersfield Ltd.
Dow Chemical Co.
A. Klipstein & Co., Ltd
McArthur, Irwin, Limited
Nichols Chemical Company
Sharpe C. A. Ltd.
The Roessler & Hasslacher Co.
Chloride of Lime:
Atteaux Dyestuffs & Chemicals Co., Limited
Canadian Salt Co.
Grasselli Chemical Co.
A. Klipstein & Co., Ltd
McArthur, Irwin, Limited
Nichols Chemical Co.
Sharpe C. A. Ltd.
Watson, Jack & Co., Ltd.
Cleaning Waste Machinery:
Jefferson, Edward.
Leigh & Butler.
Tatham, Wm., Ltd.
Watson, Jack & Co., Ltd.
Clutch Linings:
Diamond State Fibre Company.
Canadian Johns-Manville Co., Ltd.
Cloth Presses:
Gessner, David.
Combs (Wool and Cotton):
Crompton & Knowles Loom Works
Jefferson, Edward
Leigh & Butler.
Philadelphia Textile Machinery Co
Gessner, David.
Combs—Fibre:
Diamond State Fibre Co., Canada, Ltd
Concrete Paint:
McArthur, Irwin, Limited
Sharpe C. A. Ltd.
Concrete Floor Hardeners:
McArthur, Irwin, Limited
Cooling and Conditioning Machine:
Jefferson, Edward.
Cooling Frames, Cloth:
Gessner, David.
Jefferson, Edward.
Cotton:
Dominion Textile Company.
Cotton Machinery:
Crompton & Knowles Loom Work
East Jersey Pipe Corporation.
Draper Corporation.
Foster Machine Co.
Jefferson, Edward.
Klauder Weldon Dyeing Mach. Co
Lamb, J. K., Textile Machinery Co
Leigh & Butler.
Roy, B. S. & Son, Company.
Saco-Lowell Shops.
Stafford Co., The
Tolhurst Machine Works.
Wildman Mfg. Co
Whitehead, Emmans, Limited.
Cotton Openers and Lappers:
Leigh & Butler.
Saco-Lowell Shops.
Cotton Waste Machinery:
Jefferson, Edward
Leigh & Butler
Saco-Lowell Shops.
Cotton Yarn Dyers:
Saco-Lowell Shops.
Crayons:
Lowell Crayon Co
Cylinder Covering:
Dodge, C. S.
Dobbies:
Crompton & Knowles Loom Works
Conditioning Machines:
Jefferson, Edward
Coilers, (Roller):
Diamond State Fibre Company
Delivery Cases:
Diamond State Fibre Company
Damp-proofing Paint:
McArthur, Irwin, Limited
Drawing Frames:
Saco-Lowell Shops.
Jefferson, Edward.
Leigh & Butler.
Drying Machinery:
Bredannaz, Louis, & Sons
Imperial Trading Co
Watson, Laidlaw Co.
Jefferson, Edward
Leigh & Butler.
Sargent's, C. G., & Sons
Saco-Lowell Shops.
Tolhurst Machine Works.
Stephenson, Harry
Duck Machines, Cotton:
Gessner, David.
Dyeing, Drying, Bleaching and Finishing Machinery:
East Jersey Pipe Corporation.
Hussong Dyeing Machine Co
Jefferson, Edward.
Klauder-Weldon Dyeing Machine Co
Klipstein, A. & Co.
Leigh & Butler.
Philadelphia Textile Machinery Co
Saco-Lowell Shops.
Roy, B. S. & Son, Company.
Tolhurst Machine Works.
Dye Sticks:
Klauder-Weldon Dyeing Machine
Dyestuffs and Chemicals:
Atteaux Dyestuffs & Chemicals Co., Limited
American Dyewood Co.
British Dyestuff Corporation Huddersfield Ltd.
Benson, W. T., Co.
Dow Chemical Co.
Geigy Co., Inc.
Grasselli Chemical Co.
L. B. Holliday & Co., Ltd.
A. Klipstein & Co., Ltd
Kuttroff, Pickhardt & Co., Inc.
McArthur, Irwin, Ltd.
Marston, John P.
Nichols Chemical Co.
Pollack Brothers & Co.
Sharpe C. A. Ltd.
Stamford Mfg. Co.
T. D. Wardlaw & Son
Watson, Jack & Co., Ltd.
Dyewood Extracts:
Atteaux Dyestuffs & Chemicals Co., Limited
Imperial Dyewood Co.
McArthur, Irwin, Limited
Newbert Color Co.
Sharpe C. A. Ltd.
T. D. Wardlaw & Son
Watson, Jack & Co., Ltd.
Enamels:
McArthur, Irwin, Limited
Canadian Johns-Manville Co., Ltd.
Enamelled Conditioning Bobbins and Spools:
Leigh & Butler
Engineers:
Main, Chas T.
Tolhurst Machine Works.
Extractors:
Imperial Trading Co.
Watson, Laidlaw Co.
Tolhurst Machine Works.
Extractors, Full Width Vacuum:
Gessner, David.
Jefferson, **Edward.**
Fibre Receptacles:
Diamond State Fibre Co.
Fibre Cans:
Jefferson, **Edward.**
Stephenson, Harry
Fibre Containers:
Diamond State Fibre Co.
Filters:
Scaife, Wm. B., & Sons Co.
Finishing Machinery and Instal
Gessner, David
Fire-Retarding Paint:
Dominion Paint Works Ltd
Canadian Johns-Manville Co., Ltd.
Flute Rolls:
Jefferson, Edward.
Leigh & Butler
Saco-Lowell Shops.
Flyers:
Jefferson, Edward.
Leigh & Butler
Saco-Lowell Shops.
Fulling and Scouring:
McArthur, Irwin, Limited

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INDEX TO MILL SUPPLIES — Continued

Garnetts:
Jefferson, Edward
Leigh & Butler
Saco-Lowell Shops.

Garnett Grinders:
Roy, R. S. & Son, Company

Gassing Machines (Yarn):
Foster Machine Co
Saco-Lowell Shops.

Gill Boxes:
Jefferson, Edward
Leigh & Butler
Saco-Lowell Shops.

Gears—Waterproof, Noiseless:
Diamond State Fibre Co. of Canada, Ltd.

Glass Plate and Mirror:
Sharpe C. A. Ltd

Glass-Window:
Sharpe C. A. Ltd.

Graphite Paint:
Dominion Paint Works Ltd.

Harness and Frames:
Garland Mfg. Co.
Steel Hedde Mfg. Co.

Heddles:
Bredannaz, Louis, & Sons
Steel Hedde Mfg. Co.
Watson Mfg. Co., L. S

Hosiery Transfers:
Kaumagraph Co.

House Paint:
Canadian Johns-Manville Co., Ltd.
Dominion Paint Works, Limited
Harley-Kay, Limited
McArthur, Irwin, Limited
Scott & Williams.
Sharpe C. A. Ltd.
Dominion Paint Works Ltd.

Hydro-Extractors:
East Jersey Pipe Corporation.
Imperial Trading Co.
Watson, Laidlaw Co.
Jefferson, Edward.
Tolhurst Machine Works.
Stephenson, Harry

Insulation:
Diamond State Fibre Co., Canada, Ltd.
Canadian Johns-Manville Co., Ltd.

Hosiery Boards:
Harley-Kay, Limited.
Jefferson, Edward

Hot Surface Paint:
Dominion Paint Works, Ltd
Canadian Johns-Manville Co., Ltd.

Hydro Extractors:
Tolhurst Machine Works.

Incguards:
Crompton & Knowles Loom Works

Knit Goods, Finishing Machines, Crochet, Etc.:
Merrow Machine Co., The
Spindler, E. O.

Knitting Machinery:
Crane Mfg. Co.
Dubied, Machinery Co
Harley-Kay, Limited
Spindler, E. O.
Stafford & Holt.
Tompkins Bros.
Scott & Williams
Wildman Mfg. Co.

Knitting Needles and Supplies:
Harley-Kay, Limited
Spindler, E. O.
Wheeler, Charles E. & Son

Logwood Extract:
Atteaux Dyestuffs & Chemicals Co., Limited
The Roessler & Hasslacher Co
A. Klipstein & Co Ltd
McArthur, Irwin, Limited
Sharpe C. A. Ltd.
American Dyewood Co
T. D. Wardlaw & Son
Watson, Jack & Co., Ltd

Loom Drop Wires:
Greist Manufacturing Co., The

Loom Pickers:
Barlow, John W. & Co
Garland Mfg. Co.

Looms:
Crompton & Knowles Loom Works
Draper Corporation.
Jefferson, Edward.
Leigh & Butler.
Stafford Co., The
Stephenson, Harry

Loopers:
Harley-Kay, Limited.

Machinery Enamels:
Dominion Paint Works, Ltd.

Measuring Machines:
Gessner, David.
Jefferson, Edward.
T. D. Wardlaw & Son
Klauder-Weldon Dyeing Machine Co
Saco-Lowell Shops.

Mill Supplies:
Bredannaz, Louis & Son
Crabb, Wm. & Co.
E. H. Jacobs Mfg. Co.
Garland Mfg. Co.
Jefferson, Edward.
Watson Mfg. Co., L. S.
McLaren, J. C., Belting Co Ltd.
Dominion Paint Works Ltd

Napper Roll Grinders:
Roy, R. S. & Son, Company
Leigh & Butler.

Napping Machinery:
Gessner, David.
Jefferson, Edward.
Leigh & Butler.
Roy, R. S. & Son, Company

Netting Machines:
Dubied, Edwards & Co
Spindler, E. O.

Oils, Lard, Etc.:
Lawrason & Co
McArthur, Irwin, Limited

Oils, Soluble:
British Dyestuff Corporation Huddersfield Ltd.
A. Klipstein & Co., Ltd
McArthur, Irwin, Limited

Overseaming Machines:
Dubied, Machinery Co
Merrow Machine Works
Spindler, E. O.

Overedging Machines:
The Merrow Machine Company

Paints—Acid-Resisting, Brick, Concrete, Concrete Floor Hardeners, Canvas Waterproofing, Damp-proofing, Enamels, Fire-Retarding, House, Hot Surface, Machine Enamels, Penstocks, Roofs, Shingle Stains, Mill Whites, Waterproofing, Iron and Steel:
Dominion Paint Works, Limited
Canadian Johns-Manville Co., Ltd.
McArthur, Irwin, Limited
Sharpe C. A. Ltd.

Paint (Heated Surfaces):
Dominion Paint Works, Limited

Paint, Mill White:
McArthur, Irwin, Limited
Dominion Paint Works, Limited

Paint (Bridge and Structural Iron and Pipe Coatings):
Dominion Paint Works, Limited

Paint and Varnishes:
Dominion Paint Works, Limited

Paper Cop Tubes:
Taylor, Chas. F.

Paper Heating Machines:
Gessner, David

Paper—Protective:
Diamond State Fibre Company

Pinions:
Diamond State Fibre Company

Peroxides:
McArthur, Irwin, Limited
The Roessler & Hasslacher Co

Perborates:
The Roessler & Hasslacher Co

Peroxide of Sodium:
A. Klipstein & Co.
McArthur, Irwin, Limited
The Roessler & Hasslacher Co

Pickers, Leather:
Garland Mfg. Co.
McLaren, J. C.

Pickers (Shoddy):
Jefferson, Edward.
Louis Bredannaz & Sons
Saco-Lowell Shops.

Picker Pins:
Jefferson, Edward.
Saco-Lowell Shops

Pulleys—Fibre:
Diamond State Fibre Company

Picking Machinery and Cards:
Jefferson, Edward.
Leigh & Butler.
Saco-Lowell Shops

Preparatory Machine (Cotton):
Leigh & Butler.
Saco-Lowell Shops.

Pressing Machines (Hot and Cold, Rotary and Apron Cloth):
Gessner, David

Rag Tearing Machinery:
Jefferson, Edward.

Ramie Yarns:
Jefferson, Edward

Reeds:
Bredannaz, Louis, & Sons

Receptacles:
Diamond State Fibre Company

Ribbing Machinery:
Harley-Kay, Limited
Scott & Williams.

Roller Covers:
Diamond State Fibre Co. of Canada Ltd.

Rolling Machines:
Gessner, David.

Roof Paints:
McArthur, Irwin, Limited

Roving and Reducing Frames:
Jefferson, Edward
Leigh & Butler
Saco-Lowell Shops
Stephenson, Harry

Salt:
The Canadian Salt Co.

Scallop Machines:
Merrow Machine Co
Willcox & Gibb Sewing Machine Co

Scouring:
McArthur, Irwin, Limited
Sharpe C. A. Ltd.
Klauder-Weldon Dyeing Machine Co.

Scutching Machine:
Gessner, David.

Second Hand Machinery:
Lamb, J. K., Textile Machinery Co
Jefferson, Edward.
Stephenson, Harry

Separators (Yarn):
Draper Corporation.

Sewing Machines:
Willcox & Gibbs Sewing Machine Co

Shear Oil:
Borne, Scryniser Co.

Shingle Stains:
McArthur, Irwin, Limited
Sharpe C. A. Ltd.

Shell Stitching Machines:
The Merrow Machine Company.

Shuttles:
Bredannaz, Louis, & Sons.
Canada Spool & Bobbin Co.
Draper Corporation.

Sliders:
Harley-Kay, Ltd.

Silk Machinery:
Crompton & Knowles Loom Works
Leigh & Butler.
Saco-Lowell Shops.
The Stafford Company.
Whitehead, Emmans, Limited.

Sinkers:
Harley-Kay, Ltd.

Sizings:
A. Klipstein & Co.

Sizing Machines:
Gessner, David.
A. Klipstein & Co., Ltd
McArthur, Irwin, Limited
Sharpe C. A. Ltd.
Saco-Lowell Shops.

Softeners:
Atteaux Dyestuffs & Chemicals Co., Limited
A. Klipstein & Co.
McArthur, Irwin, Limited
Sharpe C. A. Ltd.
Permuit Company.

Spindles:
Draper Corporation.
Jefferson, Edward
Leigh & Butler
Saco-Lowell Shops.
Stephenson, Harry

Spindle Tubes:
Jefferson, Edward
Saco-Lowell Shops.
Stephenson, Harry

Spinning Caps:
Jefferson, Edward
Saco-Lowell Shops
Stephenson, Harry

Spinning Ring Holders:
Greist Manufacturing Co., The
Saco-Lowell Shops.

Spinning and Twisting Machinery:
Jefferson, Edward.
Leigh & Butler.
Saco-Lowell Shops.
Stephenson, Harry

Spinning Rings:
Draper Corporation.
Jefferson, Edward
Greist Manufacturing Co., The
Saco-Lowell Shops.
Stephenson, Harry

Spoolers:
Draper Corporation.
Saco-Lowell Shops.

Mercerizing Machinery:

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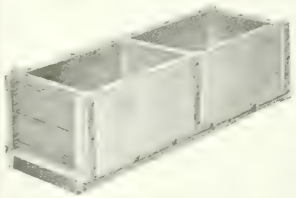

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INDEX TO MILL SUPPLIES — Continued

Spindler, E. O.
Leigh & Butler.

Spooling and Winding Machinery:
Jefferson, Edward.
Leigh & Butler.
Saco-Lowell Shops.

Transfers, Gold:
Kaumagraph Co.

Stamps, Salvage Stamps, End:
Kaumagraph Co.

Steam Specialties:
Sargent's, C. G., & Sons
Canadian Johns-Manville Co., Ltd.

Steaming Machines (Open):
Gessner, David.

Steaming Outfits (Vacuum):
Gessner, David.

Steel Paint:
McArthur, Irwin, Limited

Strap, Lug:
E. H. Jacobs Mfg. Co.

Stretchers (Cloth):
Gessner, David.

Stop Motions:
Wildman Mfg. Co.

Sweater Machinery:
Dubied Machinery Co.
Scott & Williams.
Tompkins Bros. Co.
Spindler, E. O.

Tanks, Tubs and Vats:
Klauder-Weldon Dyeing Machine Co
Goold, Shapley & Muir Co., Ltd

Tapes, Braids and Edgings:
Jefferson, Edward.

Tartar:
Atteaux Dyestuffs & Chemicals Co., Limited
A. Klipstein & Co., Ltd

Tartar Substitute:
Atteaux Dyestuffs & Chemicals Co., Limited
McArthur, Irwin, Limited.

Teazle Gigs (Rolling):
Gessner, David.
Jefferson, Edward.
Sharpe C. A. Ltd.
Stephenson, Harry

Textile Soap:
McArthur, Irwin, Limited

Tops, Noils and Waste:
Andrews, H. V.
Canadian Wool Company, Limited
Haigh & Co.
Holdroyd, Harry.
Julius Cohen & Josephy.
Wardlaw, T. D. & Son

Toque Machines:
Tompkins Bros. Co.

Transfers, Dry:
Kaumagraph Co.

Trucks:
Diamond State Fibre Company.

Underwear Machines:
Dubied Machinery Co.
Spindler, E. O.
Scott & Williams.
Wildman Mfg. Co.

Underwear Transfers:
Kaumagraph Co.

Varnish:
Dominion Paint Works, Limited.

Ventilating Apparatus:
Philadelphia Textile Machinery Co

Wadding Machinery:
Tatham, Wm. Ltd.

Warpers:
Crompton & Knowles Loom Works
Draper Company.
Saco-Lowell Shops.
Stephenson, Harry
Leigh & Butler.
Jefferson, Edward.

Warping and Beaming Machinery:
Crompton & Knowles Loom Works
Draper Company.
Jefferson, Edward.
Leigh & Butler.
Saco-Lowell Shops.
Stephenson, Harry

Warp Stop Motions:
Crompton & Knowles Loom Works
Draper Company.

Washers (Back):
Jefferson, Edward.
Leigh & Butler.
Sargent's C. G. Sons Corp.

Washing Machines (Full Width):
Gessner, David.

Water Rectification:
Permutit Company.

Waterproofing Paint:
Dominion Paint Works, Ltd
McArthur, Irwin, Limited

Water Softening Plant:
Leigh & Butler.
Scaife, Wm. B., & Sons Co.
Permutit Company.

Water Cooling Apparatus:
Gessner, David.

Weight Restoring Machines:
Gessner, David.

Whizzers:
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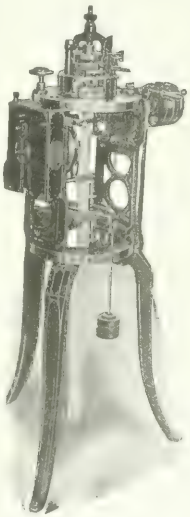

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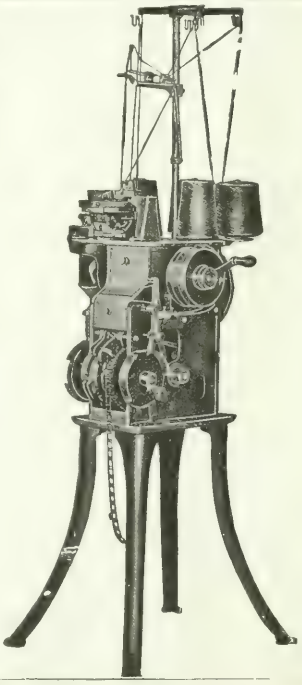

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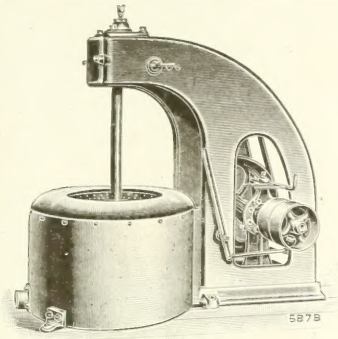

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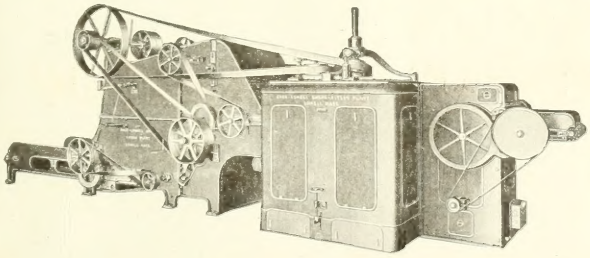

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